Beyond BRICs: 7 Emerging Markets to Watch PAGE 86

FORTUNE

FEBRUARY 1, 2015

THE AGE OF UNICORNS

At Least 80 Tech Startups Are Worth $1 Billion or More. Is This Boom for Real?

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The Most Powerful (and Hated) Force in Education

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Thank you, Joel.

Joel Tillinghast
Portfolio Manager
Fidelity Low-Priced Stock Fund

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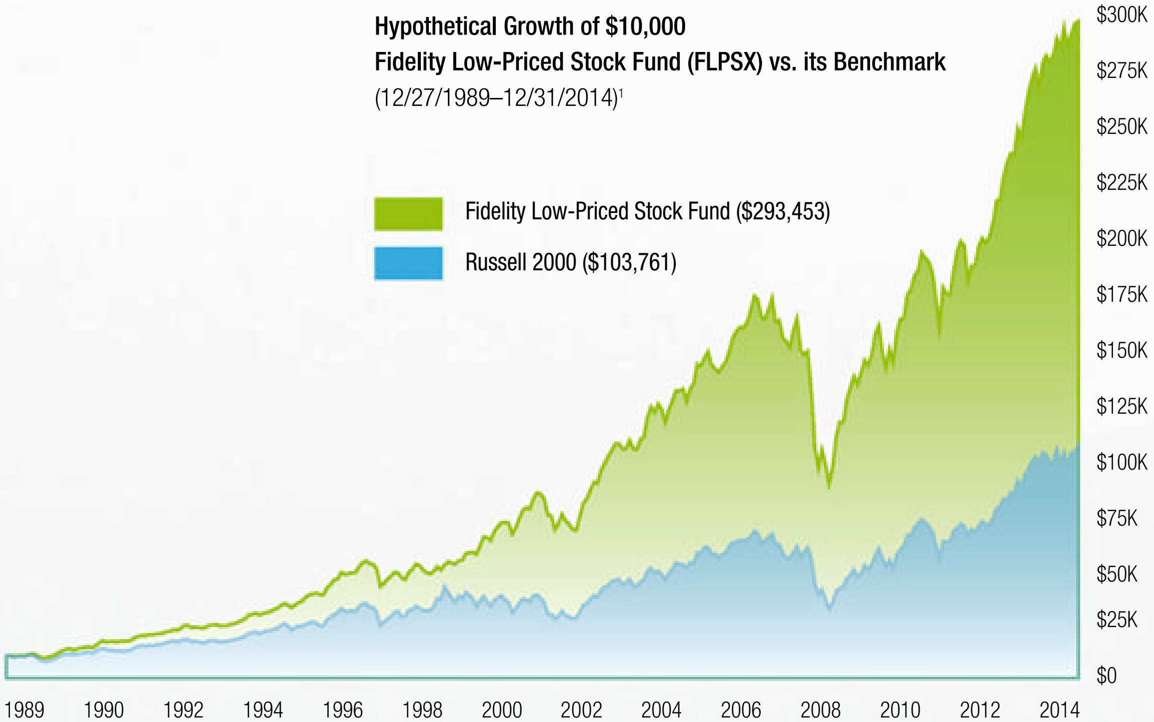
Hypothetical Growth of $10,000
Fidelity Low-Priced Stock Fund (FLPSX) vs. its Benchmark
(12/27/1989–12/31/2014)[1]



Average Annual Total Returns as of 12/31/2014	1 year	3 year	5 year	10 year	Life of Fund Since 12/27/89	Expense Ratio[2]
Fidelity® Low-Priced Stock Fund	7.65%	19.66%	15.63%	9.25%	14.46%	0.82%
Russell 2000 Index[3]	4.89%	19.21%	15.55%	7.77%	9.80%	

Performance data shown represents past performance and is no guarantee of future results. Investment return and principal value will fluctuate, so investors may have a gain or loss when shares are sold. Current performance may be higher or lower than what is quoted, and investors should visit Fidelity.com/performance for most recent month-end performance.

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[1]The chart above illustrates the performance of a hypothetical $10,000 investment made in the fund and a benchmark since the inception date of the product. Benchmark returns include reinvestment of capital gains and dividends, if any, but do not reflect any fees or expenses. It is not possible to invest in an index. This chart is not intended to imply any future performance of the investment product.

[2]Expense Ratio is the total annual fund operating expense ratio from the fund's most recent prospectus.

[3]Russell 2000 Index is a market capitalization–weighted index designed to measure the performance of the small-cap segment of the U.S. equity market. It includes approximately 2,000 of the smallest securities in the Russell 3000 Index. It is not possible to invest directly in an index.


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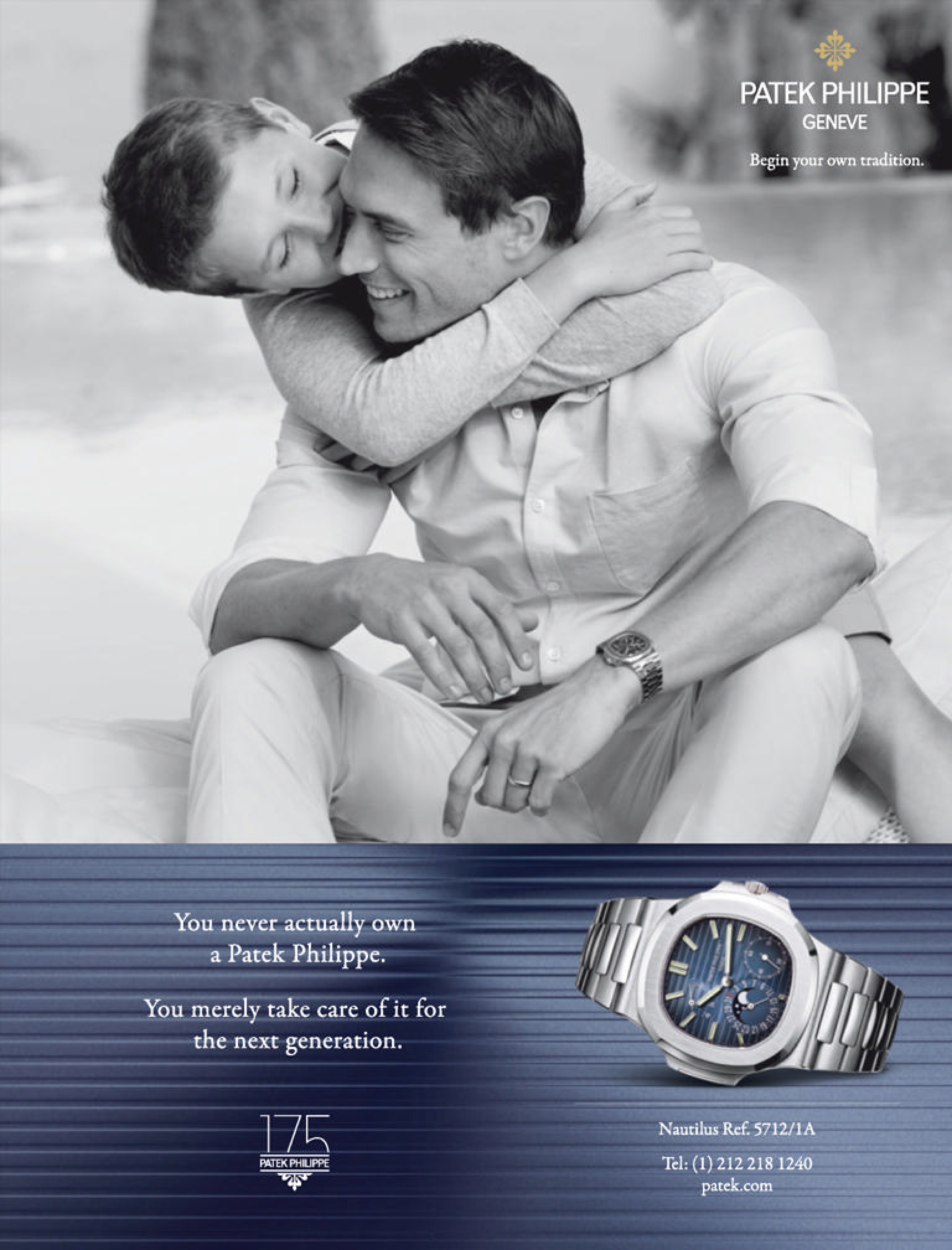
CORRECTION
"Renault-Nissan Will Need to Replace Its CEO One Day" (Jan. 1, 2015) said Carlos Ghosn is the only executive to head two *Fortune* Global 500 companies at once. While he is the only person to be the chairman and CEO of two Global 500 companies, Song Zhiping was simultaneously chairman of two Global 500 companies in 2013 and 2014: China National Building Materials and Sinopharm. (He was not the CEO of Sinopharm.)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LIFE IN OVERTIME

WHEN THE ROAR OF THE CROWD DIES DOWN, WHAT DOES A PROFESSIONAL ATHLETE DO FOR A SECOND ACT? *FORTUNE* AND *SPORTS ILLUSTRATED*'S PRO-FILES SERIES HIGHLIGHTS SPORTS STARS AFTER THE GAME IS OVER AND EXAMINES THE MARKS THEY'RE MAKING IN THE BUSINESS WORLD. IN THIS ISSUE, NFL LEGEND JOHN ELWAY OPENS UP ABOUT HIS CAREER AS GENERAL MANAGER OF THE DENVER BRONCOS. GO TO FORTUNE.COM FOR A COMPANION VIDEO, AND CHECK OUT FORTUNE.COM/PRO-FILES TO CATCH UP ON THE WHOLE SERIES.

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GO TO FINANCIAL REFORM SCHOOL

Joshua Brown, better known as the Reformed Broker in the blogosphere, writes a biweekly column for Fortune.com on the highs and lows of Wall Street. You can read the Ritholtz Wealth Management CEO's insights at fortune.com/reformedbroker.

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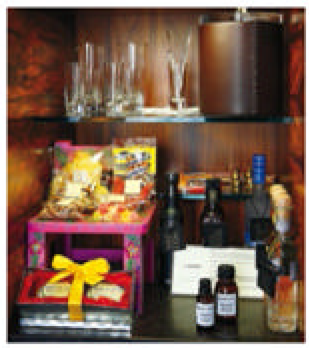
MUST-SEE MINIBARS



If you're a curious person who always checks out your hotel honor bar and wonders just why certain items are in there, Fortune.com's series "Raid the Minibar" is for you. See what some of the most luxe hotels worldwide stash away for their guests without leaving home. Find it at fortune.com/minibar.

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ILLUSTRATION BY LORENZO PETRANTONI

A BLESSING OF UNICORNS

September 1929

ON THE WALL OF OUR OFFICES in Midtown Manhattan hangs a *Fortune* cover dated September 1929 that never made it to the newsstands. It was a prototype, created five months before the magazine's launch, featuring a drawing of a white stag that fulfilled Henry Luce's vision of "as beautiful a magazine as exists in the United States."

So when we began discussing a February issue devoted to "unicorns"—the Silicon Valley term for startups that have achieved billion-dollar valuations—we were drawn to that primordial illustration. This month is the 85th anniversary of our first publication, and a nod to history seemed appropriate. Moreover, white stags and unicorns occupy a similar place in mythology—they are both elusive symbols of purity. With a few adjustments, the stag became a unicorn.

In the end, we decided that a hoodie-wearing unicorn rendered by artist Jeremy Enecio better captured the theme of the issue. The white stag remains office bound, but we offer you a glimpse above.

The Valley's unicorn metaphor is imperfect. The mythical unicorn was rarely seen, whereas the metaphorical ones have become frighteningly common, totaling more than 80 by our count. It's also hard to think of the likes of Uber CEO Travis Kalanick or Snapchat CEO Evan Spiegel as "elusive symbols of purity."

But metaphors aside, this group of startups deserves serious attention, as they are not only fattening the wallets of venture investors, but also rapidly changing the way we live and the way we do business (see our cover package, beginning on page 48). Many of the current crop are selling to companies, not consumers. Box, Cloudera, and Palantir, for instance, are helping large enterprises share, store, and analyze massive amounts of data, pointing the way to a new design for the modern corporation heralded elsewhere in this issue by Ram Charan's insightful essay on "The Algorithmic CEO" (page 45).

Which brings me back to the stag. The prototype was conceived at a brief moment of unbounded optimism in this country, when, as historian William Leuchtenburg tells us, there was "a contagious feeling that everyone was meant to get rich." Within a few weeks that optimism had been crushed. By Nov. 13, the great bull market had lost half its value, and it continued to decline for another two years as an era of unimagined austerity set in.

Does the current blessing of unicorns suggest we are again at such a turning point? There's no doubt that some of these creatures will prove as ephemeral as Snapchat's photos. But there is more going on here than another bout of irrational exuberance. It's hard to think of a single business that won't be either transformed by one of the unicorns or disrupted and displaced by them. Ignore them at your peril.

ALAN MURRAY
Editor
@alansmurray

PHOTOGRAPH BY WESLEY MANN

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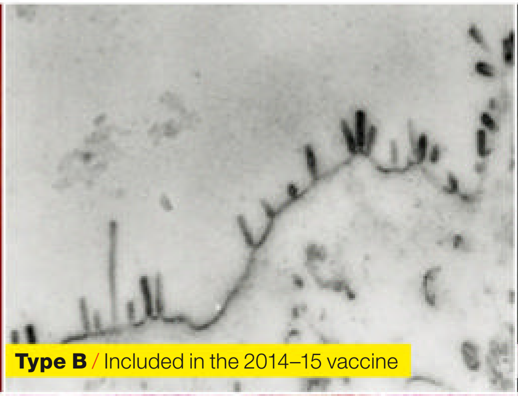
Closer Look

One Shot to Cure Them All

The latest flu vaccine is no match for the year's most common strains—but there's a better way to fight the virus. Inside the quest for the universal flu shot.

BY ERIKA FRY

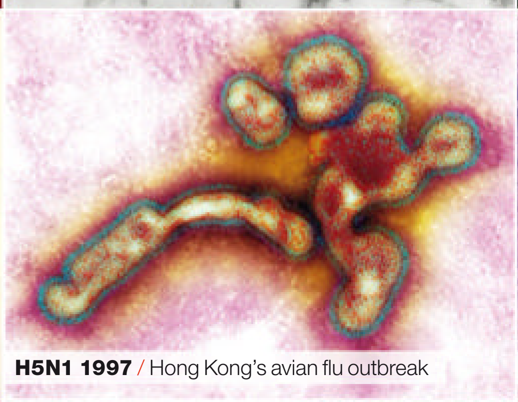
H1N1 1918 / Killed 50 million people



Type B / Included in the 2014–15 vaccine

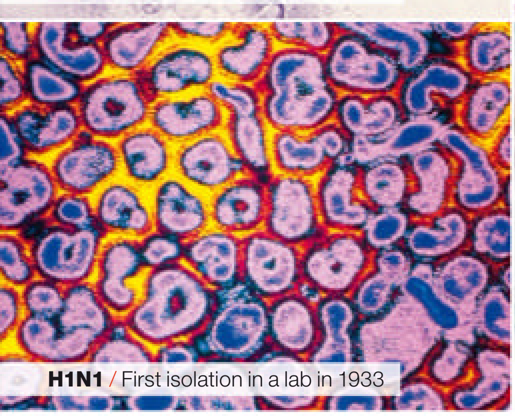
H3N2 1968 / Infected 50 million people in the U.S.

H1N1 1976 / Sickened 13 at Fort Dix



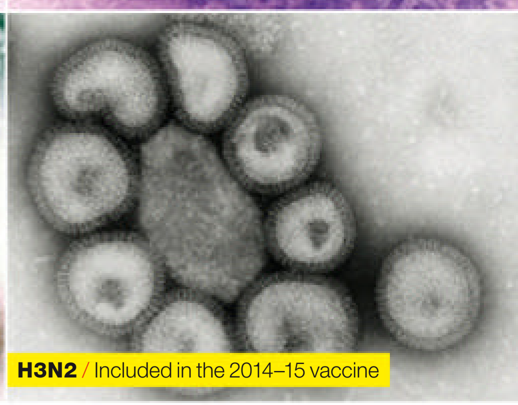
H5N1 1997 / Hong Kong's avian flu outbreak

H1N1 2009 / Mexico City's pandemic strain



H1N1 / First isolation in a lab in 1933

Avian Flu / Discovered in Scottish chickens in 1959



H3N2 / Included in the 2014–15 vaccine

AROUND THIS TIME LAST YEAR no one thought much of H3N2 influenza strain A/Switzerland/9715293/2013. ¶ It was just another flu virus. In February 2014, when public health officials gathered for the World Health Organization's annual Northern Hemisphere influenza vaccine summit, most thought the Switzerland strain would be less pernicious this winter than a different strain from Texas. So when the group recommended which three strains of flu to include in the 2014–15 vaccine, this one didn't make the cut. ¶ Its omission is the main reason America is in the midst of a particularly nasty flu season, which in a typical year hospitalizes 200,000 people and costs the nation an estimated $87 billion in medical expenses and productivity losses. This year the lion's share of U.S. flu cases is due to that seemingly irrelevant Switzerland strain. In fact, the Centers for Disease Control and Prevention estimated in January that this year's vaccine is only 23% effective in preventing the flu, and even less so in people over 50. This is not bad science—it's bad luck. It takes much of the year to test and manufacture a flu vaccine—

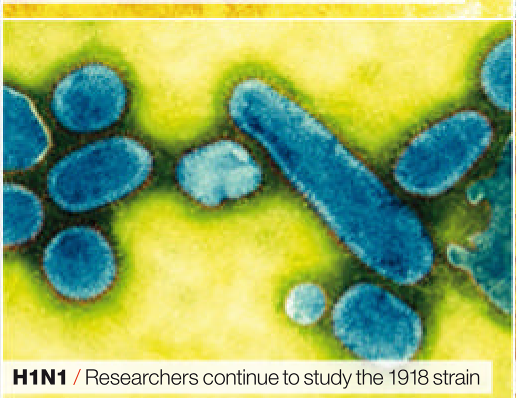
Typical flu shots protect against three strains of the winter scourge—but not always the best three. Below, some of the nastiest strains in history.

H7N9 2013 / First found in humans in China

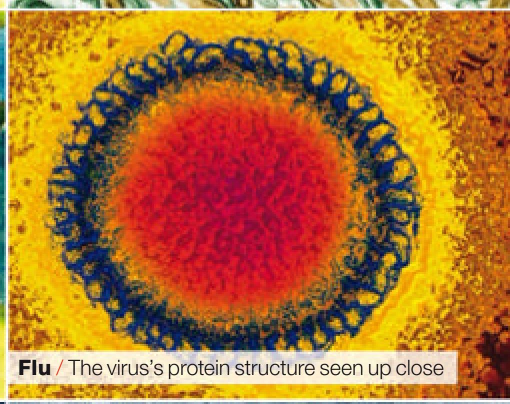
H5N1 / Affects domestic birds but not wild ones

H5N1 1997 / Avian flu rarely found in humans

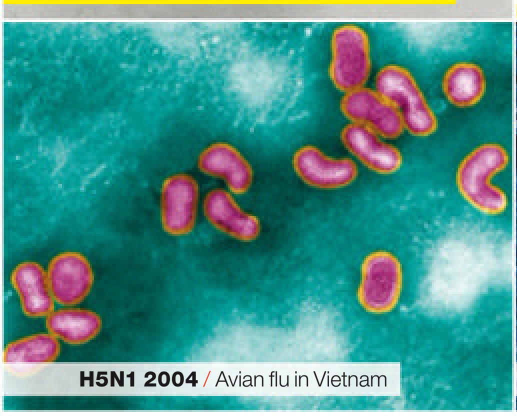
H1N1 / Included in the 2014–15 vaccine



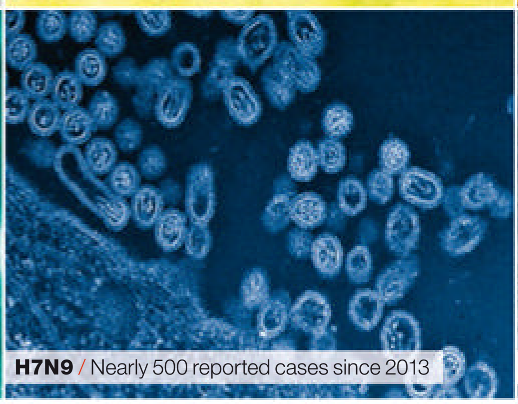
H1N1 / Researchers continue to study the 1918 strain



Flu / The virus's protein structure seen up close

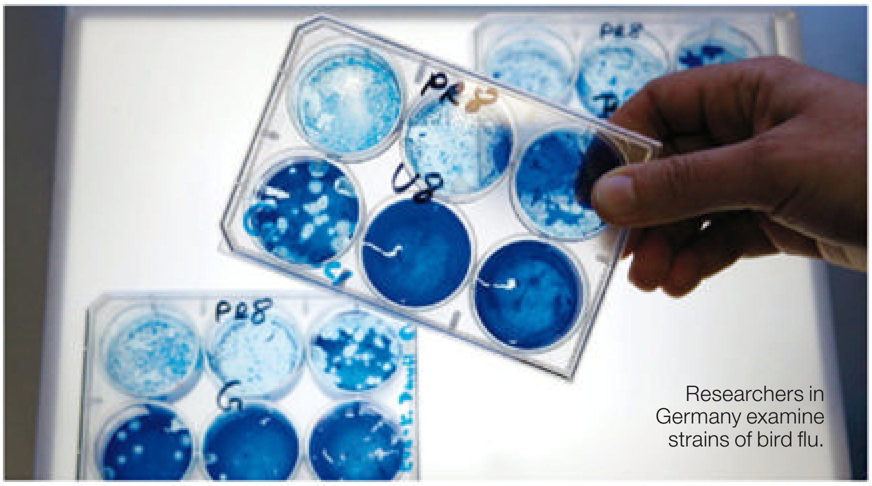


H5N1 2004 / Avian flu in Vietnam



H7N9 / Nearly 500 reported cases since 2013

H1N1 2012 / Caused an intense flu season



Researchers in Germany examine strains of bird flu.

to protect residents of the U.S. alone requires some 150 million doses. And when planning starts, it's almost impossible to know exactly which strains will be prevalent a year hence. To complicate matters further, the flu is an especially wily virus: Its various strains mutate in a near-constant flux.

"With influenza, every year it's a crapshoot what will show up," says Michael Osterholm, director of the University of Minnesota's Center for Infectious Disease Research and Policy. But the flu's potentially catastrophic cost—it kills between 250,000 and 500,000 globally each year, compared with, say, the 8,500 who have died from Ebola since 2013—makes relying on educated guesses a less-than-ideal public health policy. Osterholm says we desperately need a more broadly protective solution.

In the not-too-distant future, there could be a better way: a "universal" flu vaccine—one that would stave off all (or at least most) strains of the virus, for perhaps years at a time. The idea is to target parts of the flu virus that don't mutate and are consistent across different strains. A handful of labs and biotech firms focusing on these common antigens have vaccines in pre-clinical and early clinical testing.

When such a universal flu vaccine will actually materialize remains a matter of conjecture. National Institutes of Health director Francis Collins, once optimistic that we could see a shot in 2016, has since pushed back that estimate several years. Andrin Oswald, who heads the vaccine division at pharma giant Novartis, predicts we won't reach the goal for another decade. "We haven't seen an approach that makes us confident enough to invest," he says.

And investment here is the key. In an age of $100,000 specialty meds, flu vaccines—which can be as cheap as $2 when demand is low—are not exactly a plum business. Even as the market has grown—in 2010, the CDC expanded its recommendation for a flu vaccination to everyone over the age of 6 months—the margins are thin. While Sanofi is exploring several universal flu vaccine strategies, Novartis is in the process of selling its money-losing flu vaccine unit—and a brand new $1 billion facility—to an Australian company for $275 million.

Accordingly, most innovation has been limited to incremental improvements to the annual flu shot—which can now be administered through a nasal spray or a skin patch and inoculate against four strains rather than three.

Osterholm says such tweaks are not enough. "What we really need is a new vaccine," he says. "What we're doing is tinkering—but I don't know how to tinker with this current vaccine and make it any better. It's like we're trying to fix a horse and buggy when what we really need is a modern 2015 vehicle." F

ON ADVERTISING

How Much for That Facebook Fan?

NOT ALL "FRIENDS" ARE CREATED EQUAL. HERE'S HOW THE SOCIAL MEDIA JUGGERNAUT FIGURES OUT WHAT COMPANIES SHOULD PAY FOR EACH CLICK.

FACEBOOK'S AD PLATFORM, where the company makes almost all its nearly $8 billion in annual revenue, is dictated by a mind-bogglingly complex auction system. But the gist is simple enough: The more desirable a demographic is for advertisers, the more it costs to target ads to that group. Ads aimed at Norwegian women, for instance, cost more than almost any other group on the site, according to data from Boston ad software firm Nanigans, whose mostly e-commerce clients spend some $500 million a year on Facebook. So why bother reaching Ingrid? In Nanigans's experience, Norwegian women often tend to spend twice as much as it costs to target them.

FACEBOOK ADS' COST PER CLICK

One major advertiser's five most and least expensive countries to target.

SOURCE: NANIGANS

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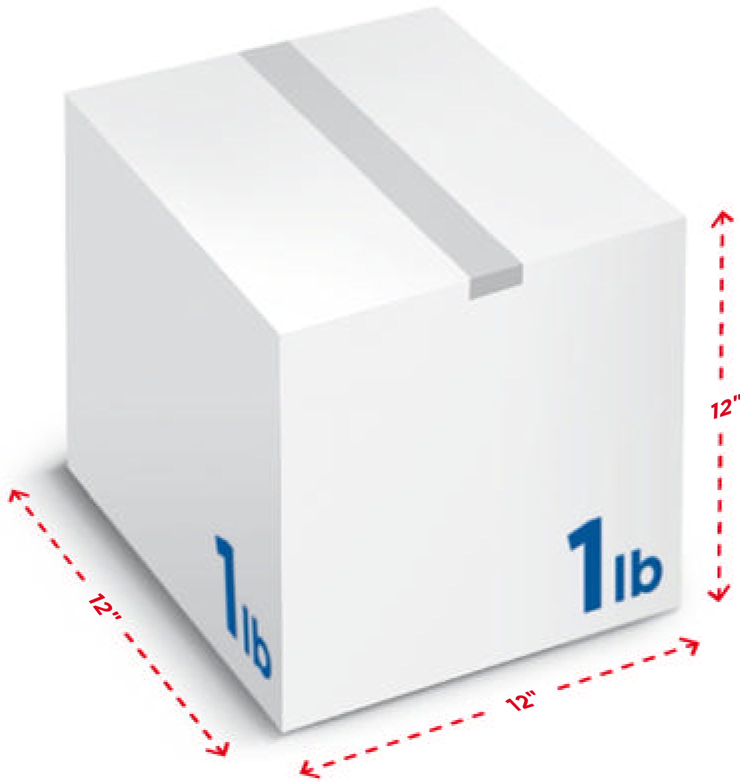
Q: HOW MUCH DOES THIS 1-POUND BOX WEIGH?

A: 11 POUNDS, IF YOU USE THE WRONG SHIPPING COMPANY.

Something is different this year: Some shipping companies are trying to box you in by expanding their use of **Dimensional (DIM) Weight Pricing**. That means you pay for your domestic package's actual weight or its dimensional weight — whichever is greater. For example, you could be billed the 11-pound rate for this 1-pound box because of its 12"x12"x12" size. That could get expensive. But you have a choice: The **USPS**® continues to offer a broad range of efficient and economical shipping options. Because we understand that one size does not fit all.

To weigh your shipping options go to **usps.com/youchoose**



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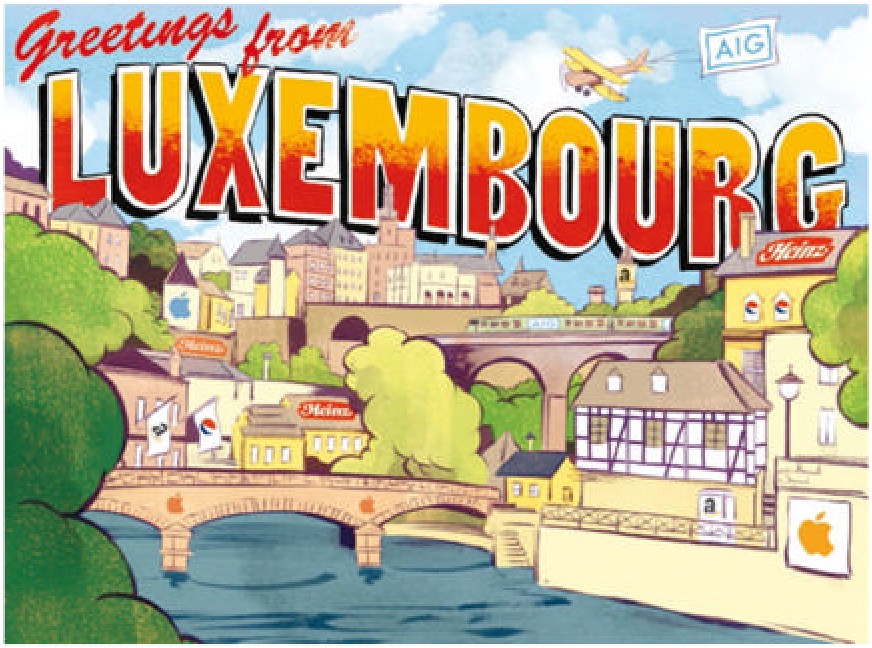


Tough Times for a Favorite Tax Haven

LUXEMBOURG'S BUSINESS-FRIENDLY TAX LAWS HAVE SAVED COMPANIES BILLIONS. THE PARTY'S ALMOST OVER. *By Vivienne Walt*

On a typical day, thousands of passengers pull into Luxembourg's central train station and traverse the busy shopping street of Rue de la Gare, where everything from pastries to rain boots is on offer. Few, however, step inside the covered walkway next to the hair salon at No. 41. If they did, they'd find little but mailboxes, dozens of them, affixed to the wall. On a chilly afternoon in early January, the mailbox marked AIG/Lincoln—the name of a partner of the New York–based insurance and real estate giant AIG—is empty and unlocked. Moments later, in the company's fifth-floor office, I meet AIG/Lincoln's employee (introduced as the sole one), who, as it happens, also works for the roughly 30 other companies housed in the modest suite. When I ask how one works for dozens of bosses, the response is, "It is not very hard. There are no activities here."

If politicians in the U.S. and Europe get their way, things in this pinprick of a country could get even quieter. Luxembourg, to state the obvious, is small—so tiny that if you drive a half-hour out of the capital, Luxembourg City, you are likely to hit Belgium, France, or Germany. Much of its population of 550,000—about the same as Tucson—is clustered around a centuries-old hillside capital, where the world's last remaining Grand Duke (the country is a Grand Duchy) lives in a palace. Its stone fortifications have been fought over through the ages, from the time of ancient Rome to the Napoleonic wars.

Now the country is facing a fresh battle for empires—this time, multibillion-dollar conglomerates. Some European as well as U.S. politicians are accusing Luxembourg of acting as a haven for egregious corporate tax dodgers, and they are demanding reform. At stake is the legal ability of companies, including hundreds of U.S. corporations, to park sizable chunks of their business outside their home countries, cutting billions from their tax bills.

Luxembourg is not the only place to capitalize on the tax-law loophole that allows this: So, too, do Ireland and the Netherlands, among others. Yet unlike those business hubs, Luxembourg's economy depends almost entirely on its fiscal appeal, a reality wrought of bitter necessity. When the country's bedrock steel industry collapsed in the 1970s, Luxembourg began offering companies huge incentives to move there. Sweeteners included streamlined bureaucracy and, more crucially, deep discounts on the country's corporate tax rate of 29%.

The strategy has paid off, and then some. Luxembourg-based mutual funds now have more than $3 trillion under management, up from about $760 billion in 2001. Only funds in the U.S. have more assets. There are 148 banks from 27 countries in the capital city, and more than 40,000 companies are registered in the country (about one for every eight residents), including more than 200 U.S. companies, with household names like PepsiCo and Heinz. Direct U.S. investment in 2013 was $416 billion. Buy a book on Amazon in Europe, and the legal page announces the company address in Luxembourg. Download a song on iTunes anywhere in Europe, and a small-type notice says you have just done business with a company situated on Luxembourg's Rue Sainte-Zinthe.

So where is this bustling Apple enterprise based? Down a sleepy side street across from a convent and a senior

ILLUSTRATION BY KAGAN MCLEOD

"As long as you have massive loopholes, companies will use them."

—Pascal Saint-Amans, Organization for Economic Cooperation and Development

citizens' home. There, a sticker on a doorbell outside a five-story building reads ITUNES. After *Fortune* rang the bell, a woman in Ugg boots came out to say there was no one to talk to in Luxembourg.

The serene atmosphere might have lasted for years had it not been for two events. First there was the global recession, which forced governments to hunt for more tax revenue. Then, in November, came the release of thousands of documents from Luxembourg's auditing companies—including many stolen by a PricewaterhouseCoopers employee in his twenties who copied them onto a flash drive and passed them to a journalist. The media ran with the story.

Dubbed LuxLeaks, the revelations ignited global outrage. The data dump suggested that auditing companies like PricewaterhouseCoopers and EY had crafted structures for giant corporations that effectively saved them from paying billions in taxes back home. One beneficiary, it appeared, was AIG/Lincoln, which AIG formed as an investment vehicle to acquire real estate in Europe. Documents showed that in 2010, Luxembourg issued a tax ruling to PwC the very same day it deposited AIG/Lincoln's plan for a complex transfer arrangement. (A spokesman for AIG denied receiving any special treatment, and PwC's tax chief in Luxembourg said lightning decisions are not unusual because details are hashed out with authorities in advance.)

While all the activity the leaks disclosed was completely legal, the popular takeaway was that Luxembourg had for years rubber-stamped dream tax deals for hundreds of giant companies, no questions asked.

In January, inside Pricewaterhouse-Coopers's gleaming new office building in Luxembourg (it opened days before the scandal broke), with its soaring atrium and glass-walled offices, the company's executives were still fuming about the LuxLeaks affair. Over coffee, PwC managing partner Didier Mouget told *Fortune* the company has been unjustly criticized simply for representing its clients' best interests. "The majority of transactions are not to escape or evade taxes," he says. "They are designed to avoid double or even triple taxation."

In any case, changes are underway. Last year the G-20 countries agreed to share their tax rulings with other governments, and in January, Luxembourg ended its long practice of bank secrecy. The European Union is probing whether Amazon's favorable Luxembourg tax arrangements amount to state aid, in violation of European law—a charge that Drew Herdener, Amazon's vice president for strategic communications in Luxembourg, denied in an email, saying the company was "subject to the same tax laws as other companies operating here."

The EU effort is aimed at closing loopholes that have driven corporate tax bills steadily down, in many cases close to zero. "As long as you have massive loopholes, companies will use them," says Pascal Saint-Amans, head of the Center for Tax Policy and Administration at the Organization for Economic Cooperation and Development. Following that momentum, in January, the EU forced companies to pay sales tax in each country in which customers made digital purchases—a major blow to Luxembourg, which had lured a huge e-commerce business with the country's modest 3% sales tax.

Many Luxembourg executives are now grumbling that if the EU wants the duchy to change its tax rules, then the rest of the world's tax havens should do the same. Asked about sweetheart corporate deals, Nicolas Mackel, CEO of Luxembourg for Finance, a quasi-government business promotion company, responded: "Go check Delaware." F

TECH WISH LIST: GIVE THEM WHAT THEY WANT

Fortune **teamed up with SurveyMonkey to poll more than 1,000 people about the habits, pain points, and trends driving the tech industry. They told us from the customers' perspective (so you know it's right) what the next frontiers should be. Here's what the masses want from the tech of the future.**

TOP PRIORITIES OVERALL

34%

Universal Wi-Fi

Long-lasting batteries **25%**
Crashproof gadgets **18%**
A universal charger **11%**
Password help **10%**

MORE STREAMING TOO

71%

Share of people who watch some TV on their computers

WEARABLES? NOT REALLY

45%

Not at all likely to purchase wearable tech

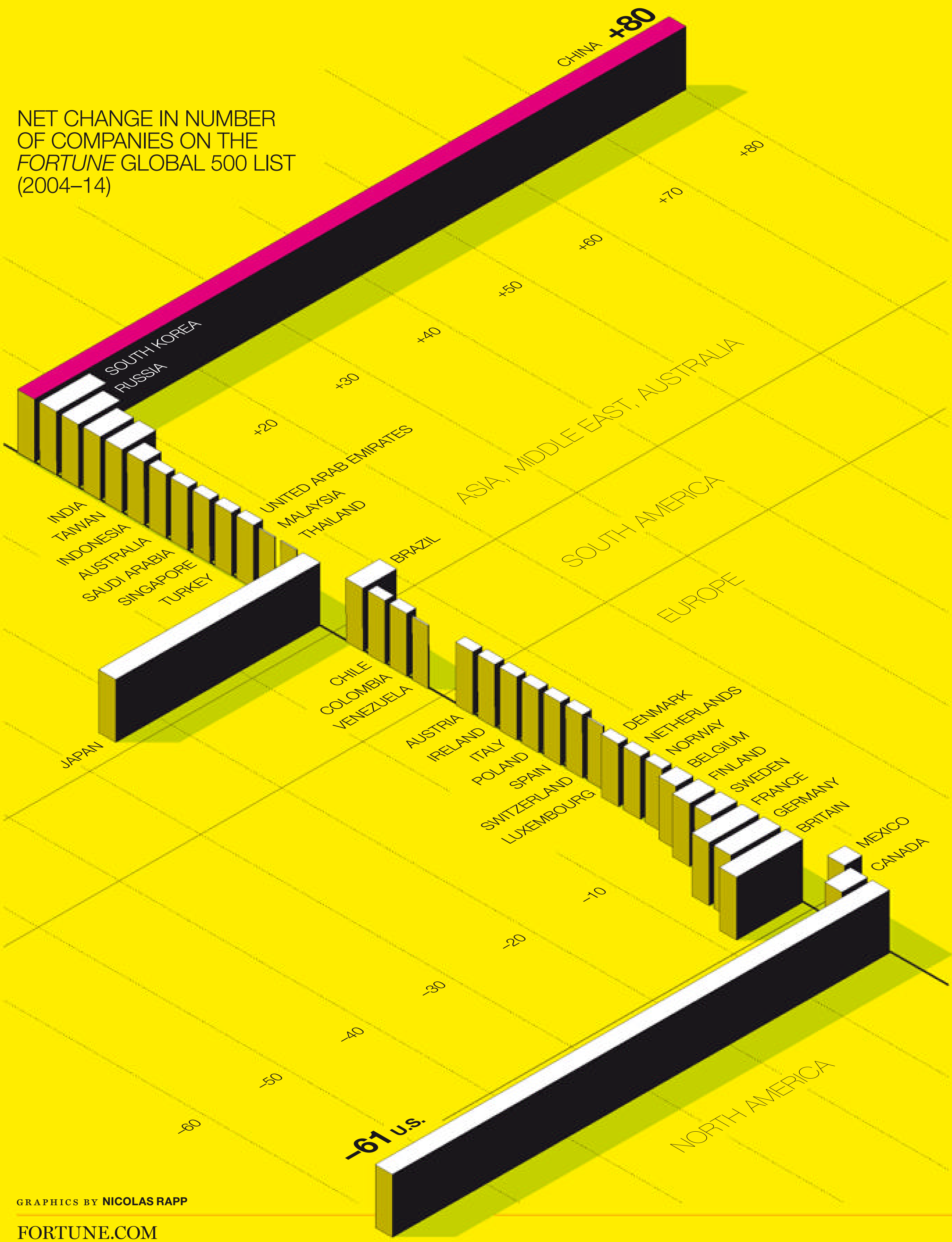
Extremely likely **6%**
Very likely **6%**

ANYTHING BUT CABLE

18%

Percentage of people 18 to 29 who cut their cable in the past year (contrary to the conventional wisdom that they never got it in the first place)


i want to strengthen my core investments.
i want to keep more of what i earn.



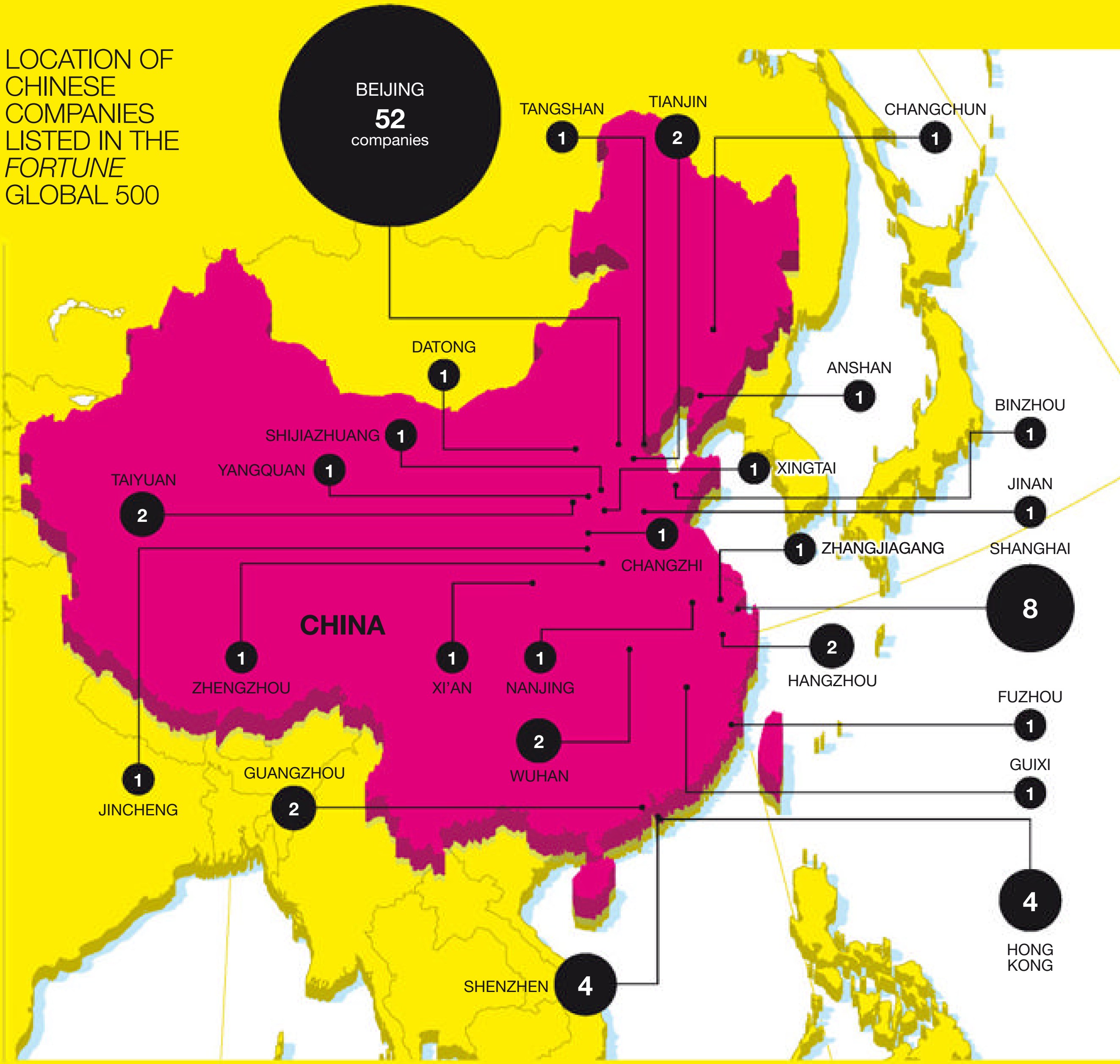
GRAPHICS BY **NICOLAS RAPP**

GLOBAL 500: A NEW WORLD ORDER

Nothing quite captures how much the earth's corporate terrain has changed as the shift in headquarters for the world's 500 biggest companies. Guess where the "home office" is now.

CALL IT THE GREAT EASTWARD MIGRATION. In 2004 more than 40% of the world's 500 biggest corporations by revenue were in North America, with the second-largest reservoir of business juggernauts just across the Atlantic in Western Europe. What a difference a decade makes. Today Asia is home to more Global 500 companies than North America, and China alone (with 95 names on the list) has more of these mighty moneymakers than Germany, England, and France combined. Indeed, three of the world's 10 largest companies—petrochemical giant Sinopec Group (No. 3), China National Petroleum (No. 4), and mega-utility State Grid Corp. of China (No. 7)—are based in the People's Republic. Only two of the top 10 (Wal-Mart Stores and Exxon Mobil) are in the U.S. —*Scott DeCarlo*

LOCATION OF CHINESE COMPANIES LISTED IN THE *FORTUNE* GLOBAL 500



The Business Case for STEM

INTEL IS PUTTING BIG MONEY INTO GRADE-SCHOOL EDUCATION—AND BETTING THAT IT PAYS OFF. *By Michal Lev-Ram*

Girls show off their work at an Intel-sponsored program.

COURTESY OF INTEL

Silicon Valley has always looked for talent among the young (Mark Zuckerberg made his first billion at age 23). It's only recently, though, that it has set its sights on grade school.

The Valley isn't trying to hire preteens (yet), but some of the country's mightiest tech giants are aiming to bolster the talent pipeline by putting serious money behind kids' math and science education, particularly for girls and minorities.

At the Consumer Electronics Show in Las Vegas in early January, Intel CEO Brian Krzanich announced that he will dedicate $300 million to sponsor STEM education in K-12 classes and in universities, with a focus on underserved regions. The money is part of a broader effort to boost diversity among its workforce and will also fund recruiting, training, and investments in female and minority-owned startups, along with education.

For the uninitiated, STEM is a much-buzzed acronym that stands for science, technology, engineering, and mathematics. Intel already invests in STEM programs—for example, the company runs two "computer clubhouses" for teens in Harlem. But its new Diversity in Technology initiative will bring significantly more money to similar programs across the country.

It's not clear yet exactly how Intel will mete out the funds. Renée James, Intel's president (and the highest-ranked woman in the company's history), will be handling the day-to-day oversight of the project and will hammer out the details with Rosalind Hudnell, Intel's chief diversity officer. James says she's convinced that putting money into teaching kids skills like math and science will help increase the pipeline of diverse talent in the long run. Other technology companies, including Apple and mobile payments provider Square, are also partnering with a growing crop of organizations that teach technical skills to students. But until now these efforts have been on a fairly small scale. What's more, their effects—if any—won't be felt for at least another few years.

That fact makes Intel's new program look even more ambitious: By 2020 it aims to achieve "full representation" of women and minorities—in other words, employ a workforce that reflects the demographics of the available talent pool. At the same time it hopes to increase the diversity of that talent pool with STEM initiatives. Currently only 24% of Intel's workforce is female, 8% is Hispanic, and just 4% is black. In the next few years the company aims to boost participation from those groups by 14%. (Keep in mind that the percentage of women at Intel has stayed pretty much flat for the past 10 years.)

Throughout the industry, companies are approaching similar efforts with growing urgency. It helps that companies increasingly feel that STEM is more than a do-gooder mission. Major players believe shareholders would be better served by an employee base that is more representative of their customers. Tech giants are also faced with heightened competition for talent, leading them to look for new ways to expand the potential workforce.

Will it work? "If I judge by the past, I'd say, 'I don't know what we're thinking,'" says Intel's Hudnell, on the company's ambitious targets. "But if I judge it by the fact that we've driven Moore's law for 50 years, then I step back and say, 'It's actually doable.'"

The Four Seasons Resort Seychelles

A GLOBE OF OPPORTUNITY

EMPLOYEES AT LUXURY HOTELIER **FOUR SEASONS** CHASE CAREER ADVANCEMENT AROUND THE WORLD.

By Robert Hackett

Living in paradise sometimes just isn't enough. Before LisaJane McBain, a guest services manager at Four Seasons, contended with ice storms at the company's flagship hotel in Toronto, she faced tropical downpours (and occasional mudslides) at its resort property in the Seychelles. And after three years, paradise lost.

"A big part of why I work here is I can live in places around the world that are unusual and different," McBain says. She is one of 280 employees who relocated within the company last year to satiate appetites for adventure and to advance their careers. The company says roughly 15% of its internal transfers have necessitated a physical relocation. And the perk is getting more popular. In 2014 the number of transfers rose by 27 people, and Four Seasons' newest U.S. property, a 26½-acre resort in Orlando, attracted its highest-ever number of moves—more than 100—when it opened this past summer.

When employees are promoted or transferred to another hotel, they are often given a big sendoff and a framed photo of the hotel signed by their peers, as well as a personalized going-away gift. Relocation benefits are provided for employee moves requested by the company. Those who pursue a transfer, however, must pay for their own moving costs and generally have to have been on the job for at least one year.

"It's something our employees highly prize," says Christopher Hunsberger, executive vice president of human resources. "We encourage it. And it helps us deliver on our level of consistency across the brand."

The differences between Toronto and the Seychelles are vast—starkly, the temperature—but one unifying factor remains: McBain says her colleagues' commitment to quality makes all Four Seasons locations great places to work.

With more than 90 properties globally, Four Seasons has built a common culture based on service. Employees are asked to abide by a simple, universal rule—treat others as you would like to be treated—that serves as a lingua franca among transplanted workers.

For those in the travel industry, such peregrinations are no surprise. One year ago Verena Lasvigne, a senior spa director, exchanged Parisian rain clouds for unblemished Moroccan skies when she moved to Marrakesh with her husband (also a Four Seasons employee) and their 6-week-old daughter. Lasvigne hopes to continue exploring the hotelier's geographic variety. "For me it's the magic of Four Seasons. You walk in and talk to new colleagues as if you've known them forever because you speak the same language, share values, have the same visions," she says. "It makes you feel immediately at home.

"This is probably the start of a long journey," she adds.

The same goes for McBain—she's eyeing Prague or Paris next. "I do not want to stop here," she says. "I want to continue to move with Four Seasons. That's why I joined the company."

100 BEST COMPANIES TO WORK FOR
No. 91

COMPANY
Four Seasons

HEADQUARTERS
Toronto

EMPLOYEES
40,000

PERK
After one year of service, all employees enjoy up to five nights of free stays annually—and receive a 50% discount on food and drinks.

To learn more about perks at Four Seasons, go to fortune.com/best companies.

Alcoa's Kleinfeld doesn't look just for experience in his managers, but stamina too.

Giving New Lives to an Old Product

Alcoa CEO **Klaus Kleinfeld** pushes to find high-margin uses for aluminum, like the latest Bud Light "bottle." *By Geoff Colvin*

Aluminum sold for $3,400 a ton when Klaus Kleinfeld took the helm of Alcoa in 2008. Six months later the price had plunged to $1,100, and Kleinfeld had to lead a massive restructuring of the venerable company (founded in 1888). With the bad days now behind him, Kleinfeld, 57, focuses on two priorities: keeping costs low to maintain profits in his commodity aluminum business and developing innovative new products—aluminum-lithium alloys, beverage cans that look like bottles, high-tech fasteners—for which Alcoa can charge a premium. He talked recently with *Fortune* about new markets, developing leaders, and more. Edited excerpts:

Ford's new F-150 pickup truck got a lot of attention for having an aluminum body. Is that the beginning of a trend, or is it a reflection of once-high gas prices that are now getting lower?

It's driven by two things. One is regulation, which basically obligates the car companies to get better on their fuel efficiency.

At the same time consumers today have a choice in all categories [of vehicles], so you can now go for the F-150 and say it has to have towing capacity and fuel efficiency as well. And you can have strength too. This is military-grade aluminum. It's lighter. It's better.

How much weight does it take out of a truck?

Ford has said more than 700 pounds. Just think about it—you have the choice now to get the fuel efficiency or to load 700 pounds more onto the truck and travel with it. That's the choice the consumer has.

On the other hand, a couple of very high-profile planes, the Boeing 787 and the Airbus A350, are made of carbon fiber rather than aluminum.

We're very happy about these things because we also have a fastener business and a forging business where we make a lot of materials for those composite planes. There's no plane in which Alcoa has more total value, in fact, than the 787.

The interesting thing is that when Boeing and Airbus had to make a decision two years ago about their two workhorses, the 737 and the A320, they decided to go for aluminum. The new versions are all-aluminum, so I would say clearly aluminum is here to stay. And the aluminum alloys that go into them are not the same as 10 or 15 years ago. The invention of aluminum lithium, the combination with other materials—this is the trend.

How do you develop leaders at Alcoa?

There is a T-shaped model. The horizontal line across the top represents qualities [we look for] related to analytics, strategic thinking, languages, some math skills, and some international experience. But I also look at depth. A person needs to have the stamina to experience, at an early point in his or her life, something very deep or challenging or frustrating—and getting through it.

And I almost don't care what it is. If somebody said, "I spent two years in India studying Indian spiritual practices," and then I find out how the person thinks and what the individual has learned, that for me counts as one of those deep dives.

If you want to lead anything, it doesn't work to just have the general management skills because there are going to be one or two or three issues where you have to roll up your sleeves and get into it and don't stop digging until you've found the bottom. If you don't do that, you're not going to earn respect.

KAI NEDDON—LAIF/REDUX


know

Charging Ahead on Diversity

As Silicon Valley startups and tech giants alike aim to fill their teams with more women, they should sneak a peek at the **American Express** playbook. **BY CAROLINE FAIRCHILD**

ENTERPRISE TECH could learn a lot about gender diversity from American Express. Last month, Intel announced a $300 million initiative to diversify its workforce (see page 20) while Microsoft, Google, and other tech giants have acknowledged a need to support more female talent. Yet for American Express, the issue is old hat. The financial services giant started its first women's inclusion group 22 years ago, and groups for underrepresented minorities soon followed. The world's largest card issuer by purchase volume (and No. 11 on *Fortune*'s list of Most Admired Companies), American Express now boasts 39% women in vice-president positions and above. Women made up 66% of corporate executive hires in 2014, a statistic that chief diversity officer Valerie Grillo attributes to the many years American Express has been thinking about the issue. In fact, in 2008, just when most corporations were feeling the brunt of the financial crisis, American Express pushed its diversity efforts into full throttle. Why? For AmEx execs, better business performance and retaining top female talent have always been part of the same discussion. "Nobody said we have to do this. It's just smart business," says Susan Sobbott, president of global corporate payments. The result is a company that sets an example for other industries that are trying to catch up.

COMPANY SNAPSHOT

HEADQUARTERS
New York City

NUMBER OF EMPLOYEES
62,800

BUSINESS
The $35 billion financial services giant is best known for its credit card and traveler's check business.

REAL RESULTS

AmEx's employee affinity networks, which encompass 30% of employees globally, have grown over the years to 16 groups with close to 100 chapters. Groups for women, minorities, veterans, and LGBT workers support AmEx's larger mission to create community among the staff but also drive real results for the business. Last year, when AmEx looked to target multitasking moms (who control 70% of household spending), senior execs within the women's network were brought in as consultants on the project. "It is critical to make the connection between diversity networks and business results so that it is not viewed as a program du jour, but a very important part of our growth strategy," says Ed Gilligan, president of AmEx and executive sponsor of its women's initiatives.

SPONSORED SUCCESS

A study co-sponsored by AmEx in 2010 discovered that women are less likely than their male peers to find advocates who champion them for promotions and raises. The researchers concluded that this issue is directly linked to the small gains women have made breaking into upper-management positions at *Fortune* 500 companies. The research inspired executives like Gilligan to take concrete steps to address the issue, and the company instituted a formal sponsorship program as a result. As of 2014, 25% of senior executive women around the globe who participated in the program were promoted, and 45% moved strategically within their respective levels.

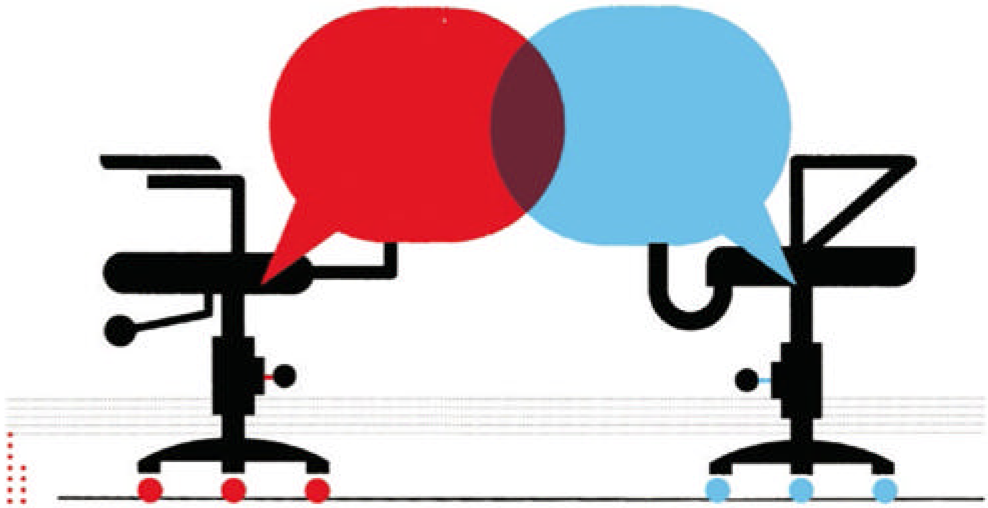
A NEED FOR FLEXIBILITY

A majority of employees split their working hours between office and home, or work primarily from home. To ensure they are attuned to office culture, AmEx offers an engagement network for virtual workers that 96% of participants say has allowed them to succeed. Management also says it helps retain top talent. Kerrie Peraino, an SVP of international human resources, worked three days a week for three years after having her second child and received a promotion during that time. "Had that not been offered to me, I would not still be with American Express," she says.

ILLUSTRATION BY ALEX NABAUM

5 Ways to Shake Up Your Offices

IT'S MISSION CRITICAL THAT KEY EXECUTIVES TALK TO ONE ANOTHER. MAKE SURE THEY SIT TOGETHER. *By Verne Harnish*



1 THE CEO AND MARKETING

For most companies, the marketing strategy is the same as the overall growth strategy—yet marketing is often viewed as glorified sales support. To really ignite growth, the CEO should work directly with the marketing team to tackle the four P's that help companies win more business: product, price, place, and promotion. Make sure that your CEO shares an adjoining conference room with your team's marketing gurus so that's easier.

2. R&D AND MARKETING

Many companies isolate themselves from the market to do months of research and development, only to discover that their "brilliant" product is a dud. That won't happen if you maximize positive collisions between marketers—who have their finger on the pulse of what your customers want—and the R&D team. Don't have enough room to seat them together? Make sure both groups share break rooms and restrooms, as they do at the 3M Innovation Center.

3. SALES AND OPERATIONS

These two departments are usually like oil and water—with sales constantly trying to sell what the company doesn't make and operations pushing back. Companies like Amazon are great at delivering on big promises because they find ways to bring these teams together. Co-locate sales and operations, and they'll be forced to work out their differences. You'll be surprised by the ideas they come up with when they're not locked in battle.

4. HR AND IT

I call this kumbaya meets the pocket protectors. Both of these teams provide the supportive infrastructure that enables everyone else to thrive and make good decisions. Sadly, at most companies the information technology team rarely steps out of its dingy server closet into the lavish suite housing human resources. Seat these teams together, and you'll find it's easier for them to collaborate on training programs to develop talent and to disseminate data that all your employees need to do their jobs well.

5. TREASURY AND THE COMPTROLLER

To prevent the temptation to embezzle, many companies already have different employees counting the money coming in vs. what's going out. But if your whole accounting team sits in the same room, you're making collusion between them too easy. Seat your treasurer and comptroller on opposite ends of the building so they don't get too cozy. When two employees collude, the median damage rises from \$80,000 to \$200,000, according to the Association of Certified Fraud Examiners. Ouch!

VERNE HARNISH IS THE CEO OF GAZELLES INC., AN EXECUTIVE EDUCATION FIRM.

ILLUSTRATION BY MATHEW HOLLISTER


Capital One
As a business owner
you gotta have
GUTS.
FIRE.
PASSION.
Shouldn't your unlimited dedication be rewarded
WITH UNLIMITED CASH BACK?
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A SERIES FROM THE EDITORS OF FORTUNE AND Sports Illustrated

Pro-Files

The Man With the Golden Gut

JOHN ELWAY DISPLAYS THE SAME INSTINCTS, HARD WORK, AND SWAGGER AS A GM THAT HE DID AS AN NFL PLAYER. WILL IT TAKE HIM AS LONG TO WIN A SUPER BOWL AS AN EXECUTIVE? *By S.L. Price*

"I've always fought to stay off the pedestal," says Elway, seen greeting a player before the Broncos took on the Raiders in November.

ODD COUNTRY, this land of the middle-aged. One day you're threading 65-yard passes off your back foot, and the next you've crossed some unseen border, and hair's falling out or sprouting from strange places. That first colonoscopy, 54-year-old John Elway admits, was a marker. But the real jolt came five months ago, when he became a grandfather. "That's the one," he says, "where I said, 'Wow, I am starting to get up there.'"

There have been other signs. Quarterback withdrawal—twitchy fingers and chronic second-guessing on Sunday—long ago gave way to a more generic yen. "I just wish I had that 25-year-old body," Elway says. So he engages daily in the endless task of remaining fit. Today's masochism involved abs work, the monotony of a stair-climb machine, and a final charge on the stationary bike. Still sweating, the top buttons of his dress shirt undone, the man behind the desk at the Broncos' complex this December morning hardly looks like the most dynamic force in today's NFL.

But he just might be. As

For more great business stories in our Pro-Files series, check out both Fortune.com and SI.com.

PHOTOGRAPH BY JED JACOBSOHN

Denver's general manager, Elway has found the thrill of assembling a roster as cathartic as a Hall of Fame playing career capped by two Super Bowl titles. Inheriting a 4–12 roster in 2011, he gambled on coach John Fox, who was coming off a two-win season at Carolina, and the next year he bet the house on 35-year-old Peyton Manning.

In January, for the second year in a row, a scintillating regular season ended in postseason disappointment, this time a 24–13 defeat at the hands of the Colts. Last year a torching in the Super Bowl led Elway to spend $60 million on defensive talent. It's not clear what steps he'll take this time around, beyond a mutual parting of ways with Fox. Elway, says longtime NFL exec Ernie Accorsi, "hasn't made any bad moves."

Still, this workout thing—it's got to be for a reason, right? Staying in shape, maintaining for the sake of maintaining? Please. For Elway, what's the point if you're not keeping score? He has always had to win, you see. Always.

Today's routine was part of a competition. Elway is half of a team taking on three other pairs of Broncos personnel. Whichever drops the most body fat in six weeks wins. The problem: Elway is by far the oldest competitor and has been known to succumb to the rogue doughnut, the second glass of Pinot. When the competition ended on Dec. 1, Elway hadn't pulled his weight. "I let our team down," he says, "so the competition [was] continued until Dec. 31."

He cackles when told that the maneuver shocked no one. Old teammates still complain that whenever Elway was losing at Pop-A-Shot or gin rummy, he changed the game to best two out of three. "If you're beating him," says his Stanford teammate Don Lonsinger, "he's not going to bed."

SINCE TAKING this job, Elway sleeps less. Time does that to a body. There's also the fact that he feels far more responsibility—and far less control—than he did as a player. Come Sundays, all he can do is watch. The night before last year's Super Bowl, Elway stared at the ceiling, thinking, "I've got a bad feeling."

Being right was no consolation. The pasting embarrassed Elway. It stirred up echoes of his own nightmarish role in a 45-point loss to the 49ers in 1990—his third Super Bowl defeat. "They'll never let me live this down," Elway said that night, staring into a bathroom mirror.

Like most people, he has all but forgotten that version of himself. Two late-career Super Bowl wins, at 37 and 38, changed the conversation forever. Elway used to insist that he didn't need a title to fulfill his promise. But he was lying. That became clear just before redemption. It was January 1997; the Broncos had built a 13–3 team that would seemingly give Elway his last best shot at a ring. Then Denver lost unexpectedly in the wildcard round. Afterward Elway went home, and when his twin sister, Jana, called, her voice did something to him. He'd never cried in front of his four children. But he did then. Says Elway: "I knew I was running out of time."

THE DREAMS started six months ago. John has found himself jerking awake because suddenly Jana is right there. "I look back now," Elway says, "and I realize how much I miss her."

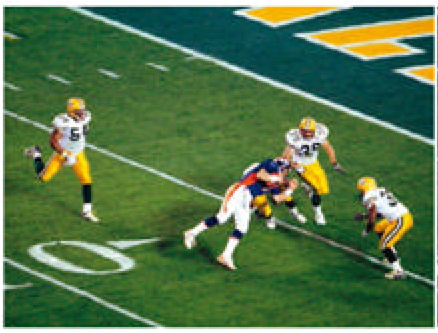
His sister was born 11 minutes after him, on June 28, 1960, and she came closer than anyone to knowing what it was like to be John Elway. It wasn't just that, early on, they shared a "twin" language, or laughed constantly and never fought. It was that when John got in trouble in kindergarten, Jana would cry *for* him. "She was almost my conscience," he says. She was also his match in competitive fury, nearly killing herself trying to beat John at everything.

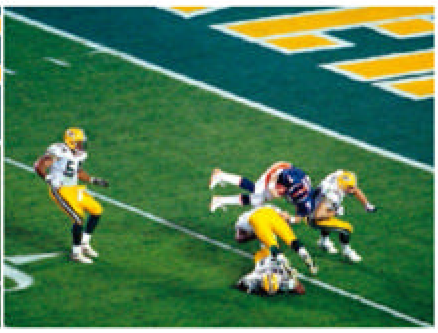
Their college-football-coach dad, Jack, had always wanted a son, and John became his sidekick, best friend, and project. By the time the twins reached high school, Jana had shaped into a tennis prospect while John had emerged as one of the greatest football talents ever.

At Stanford, John was physical greatness personified: fast and durable, with a cannon arm. Because he was so gifted, people forgot that he'd grown up with a man who had helped invent the spread offense and had coached defensive secondaries. Jack would pick apart his son's performances, and the practice continued when he joined the Broncos as a scout in 1993. The Denver QBs and the offensive line would hit a local bar, and Jack would be there, Skyy vodka in hand. "All of a sudden you'd ask, 'Where'd John go?'" says Keith Kartz, Elway's longtime center. "And he'd be over in the corner talking football with his dad."

Elway's last two NFL seasons inverted all the disappointment of his first 14. For years he had operated with a second-rate supporting cast; now he had running back Terrell Davis, great receivers, a defense with cojones. Elway didn't even play that well when he finally won

"It was when I finally realized I'm not the one who has to do it all that we started winning championships."





Elway hurtling through the air to make the key first down in the Broncos' first Super Bowl win.

KEVIN REECE—GETTY IMAGES

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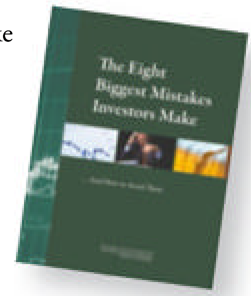

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Ken Fisher

Ken Fisher
– CEO and Co-Chief Investment Officer, Fisher Investments
– *Forbes* "Portfolio Strategy" columnist for 29 years
– Author of 10 financial books, including four *New York Times* bestsellers

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INVEST ASSURED

a Super Bowl, against the Packers: 11 of 22, no TDs, one interception. But the numbers didn't matter, only the sight of the old QB scrambling, hurtling through the air, helicoptered by three defenders, lunging for the game's key first down.

Until the 1998 season Elway had missed only nine games due to injury. Then it began: His hamstring, then his back, and he missed four starts. It irked him, but his critics had nothing to say now. Elway had a newfound sense of ease as he limped his way to MVP accolades in his second Super Bowl win.

The second title confirmed a worldview that would infuse how he approached business, celebrity, parenting his four kids, and, later, running a team: Life is a pendulum. "If you have three here," Elway says, raising a hand over his head, "you're going to have three here," lowering it under his desktop. "I think we all end up back at zero. The true challenges come from when you face adversity. How do you handle that?"

THE IDEA of buying an Arena Football League team bubbled up after Elway finished playing in 1999 (after selling his five car dealerships for $82.5 million). But the project was pushed aside as he explored bigger scores. And now the pendulum swung the other way. Elway's attempt to open a chain of upscale laundromats failed, as did MVP.com (a sports-merchandise venture with Michael Jordan and Wayne Gretzky) and a bid (with Broncos owner Pat Bowlen) to buy the Avalanche, the Nuggets, and the Pepsi Center. "Three plus, three minus," Elway says. "We all end up back at zero."

Then, in 2001 and 2002, his dad and twin were gone: Jack from a heart attack; Jana, at 42, from lung cancer. While she was fighting the disease, John pulled strings at Stanford to get his sister into clinical trials and bought her a townhouse after her marriage fell apart. During all this he was scrambling to join Bowlen and billionaire Stan Kroenke to create an Arena League team. In June 2002, Elway appeared at a press conference announcing the birth of the Colorado Crush. That same month he and his wife publicly acknowledged they were separating. "It was the roughest period he's ever been through," says Elway's mother, Jan.

Firing friends was tough, Elway says, but "it was probably the best learning experience... I followed my gut, and it ended up being right."

On July 23, John was told to rush to Stanford Hospital. Jana could barely breathe. As John sat with her, she whispered, "I just want to live." Around 10 p.m. nurses wheeled Jana out of the room for a scan. The family stood in the hallway. As she passed by, Jana fiddled with her mask, trying to speak. John wanted her to keep it on. She kept tugging. "Put that back on!" he kept saying until finally there was a moment when the illness fell away. As the bed was wheeled down the hall, Jana's eyes lit up and she raised her middle finger.

John had to laugh. And that's how it ended: a man and his fading conscience, staring at each other.

RUNNING A TEAM is work, the criticism constant, the paperwork numbingly dull. But if anyone thought that Elway would take Arena football lightly as a new CEO, that didn't last. For all his swagger, Elway turned out to be anything but an egotist. "I've always fought to stay off the pedestal," he says. "I've got to make [everyone else] feel like I'm one of them. When they know their opinion is important, you're going to get the best out of those people."

The Crush's inaugural season, in 2003, was a reality check. With an eye toward training Elway for a role with the Broncos, Bowlen viewed the Arena League as an ideal place to master the rudiments of salary cap, staff management, league relations. Michael Young, a former Broncos receiver who served as a Crush vice president, says Elway "wanted to sit in on ticket-sales meetings, go on corporate sales calls, understand how merchandising worked." He even folded team T-shirts when necessary.

The Crush were terrible that first year, and that led Elway to a moment of truth: He had to fire coaches—friends—and it hurt. "It was toughest because of the closeness," he says, "but it was probably the best learning experience I went through. Two years later we won the championship. I followed my gut, and it ended up being right."

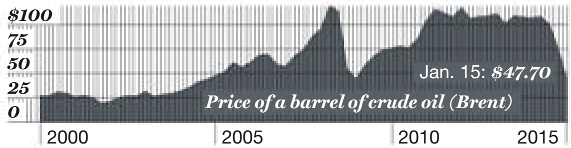
Elway talks about his gut often. "When I was playing," he says, "I got a gut about the type of guys I wanted to be around, the type of coaches I wanted to be coached by. Following that gut, I created the philosophy that I'm going to attack this thing with."

That helps explain why Elway is a good bet to win NFL Executive of the Year and why he's been on a run. But even before the loss to the Colts, he knew the pendulum would hurtle back. Bowlen resigned in July because of Alzheimer's disease. And Elway's 24-year-old son, Jack, was arrested for assault after his girlfriend accused him of dragging her out of a car by her hair. Jack pleaded guilty to a lesser charge and was sentenced to a year's probation and counseling. Elway radiates equanimity when asked about such a loaded subject. "A kid made a bad decision," he says, "but he'll learn from that."

How can Elway be so sure? Something in the gut, maybe. A feel for things his own father instilled. It's strange: Until recently, John had kept thoughts about his dad and sister at bay. Then Jana started showing up in his dreams. Two months ago Elway fell asleep and found himself in a room with a smiling Jack. That vision was enough to keep John charged for hours—and hopeful. Jack didn't come close enough to touch. He didn't say a word. Maybe next time, though. ■

INVEST

Oil, Reverting?
The price collapse looks less dire when compared with levels in the past 15 years.



Interview

Oil, Fear, and the Rational Investor

The plunge in energy prices has reshaped the investing environment, argues **Howard Marks** of Oaktree Capital. ***By Lauren Silva Laughlin***

OVER THE PAST two decades, Howard Marks has transformed Oaktree Capital from a private distressed-investment shop to a publicly traded powerhouse overseeing $93 billion in multiple types of assets, all while establishing himself as a financial sage via his much-discussed letters to investors. Last year Oaktree hired its first CEO, in part so that Marks, now a co-chairman, can focus on investment strategy. A vulture investor, he has started to get aggressive in recent months—he's been buying distressed debt from European banks—as plunging oil prices have

BRENT LEWIN—GETTY IMAGES; CHART SOURCE: U.S. EIA

"Maybe they don't think it or say it explicitly, but I think [investors] are saying, 'If I can't get 8% safely, I'll get 8% unsafely.'" *—Howard Marks, Oaktree*

reshaped the markets. In an interview, he offers insights on the vanity—and fears—of many investors, and why now may be a good time for shipping-company stocks. Edited excerpts:

In September you said you were cautious. In December you said you were becoming aggressive. What changed?

A change in market conditions can happen very fast. When other people are complacent, confident, composed, and optimistic, asset prices will be high and we should be very careful. That's the way things were as recently as September. By December, I think that bull-market psychology had been punctured somewhat. People had turned toward being pessimistic, depressed, unsure, and disillusioned. Usually such people sell in a pack and prices go low, and that is when we can turn aggressive. I like to buy from a disheartened holder of assets, not a cocky one. And that's what changed.

U.S. stocks were actually higher in December than in September. Was it more a psychological puncture based on oil prices?

Yes—but you can't automatically say, "Stock prices fell because the price of oil fell." Cheaper oil isn't necessarily bad for all economies and companies. Rather, people switched from "It's all good" to "Something's wrong," and from "I understand everything that's going on" to "The world is a more complex and confusing place than I thought." That tends to have a negative effect on the prices of stocks and bonds, even those that aren't connected to the underlying event.

Oil prices have fallen 50% in a few months. Are people being too emotional?

It's often easy after the fact to find ways that the analysis was wrong. After the fact, people say I missed this or that. If it is so obvious in retrospect, why wasn't it obvious then? This is how bad analysis works. First, the oil market has price elasticity. Some said [when prices were high] that consumption is inelastic, and that's a big mistake. When gasoline was up around $5, people were driving less.

There are also theories that the Saudis—who have a low cost of production and a lot of money in the bank—want to have the price of oil be low to punish some parties or discourage other parties. This theory goes back to the Rockefellers, who opened gas stations and put prices at less than cost to drive out competitors. Who knows if this is happening? The point is that the price of oil is not a free-market good and hasn't been for a very long time.

So what should investors do?

This dynamic makes the price of oil crazy and unstable. In May 1999 the price of oil was $10. In the past eight years we've seen oil at $50 and $147. If the price goes down, as it is now, people use more, which puts some upward pressure on the price. And if the price goes down, people drill less and produce less, which decreases supply and puts upward pressure on the price.

In theory and in the long run, oil prices may have a positive underlying trend. But economic models don't necessarily work in the short run. If the price of a good is artificially supported, as the price of oil has been, you can't necessarily predict future trends by extrapolating from the present level. It was above $100 for almost four years and seemed "right" there. But $100 oil sure seems like a pipe dream now.

You've liked shipping for a while. Are you still interested?

Cheaper oil makes it more economic to operate ships. Same for airlines. Airlines move people, and when air tickets become cheaper, they move more. Shipping moves goods, and when the cost of shipping goes down, more goods should move. For the most part, low oil prices are good for shipping.

Overall, are low oil prices good or bad for global growth?

It's a big debate. Cheaper oil should encourage consumption. I think lower oil prices will be a plus in the U.S. Money spent on fracking and shale is less likely to be spent, and all the money spent by people doing the work will be negatively affected. But the net effect on the U.S. is positive. People have compared lower oil prices to a $1.3 trillion tax cut. What would happen if Washington enacted one of those tomorrow? We know that would be positive.

What conversations are driving your investment decisions now?

I always imagine conversations that are going on inside people's heads. The conversation I imagine people are having in the last year or few years is the idea that "I need return. Money markets are yielding zero, and Treasuries are yielding 2%, and I need 8%." Maybe they don't think or say it explicitly, but I think they are saying, "If I can't get 8% safely, I'll get 8% unsafely."

So you think investors are taking too much risk in the bond market?

Since people can't get the returns they used to get doing the things they used to do, they have been taking bigger chances. They may be buying riskier debt than they used to, at lower yields, and with weaker terms and covenants. It's okay to do these things as long as you do them knowingly and they're within your competence (or that of your manager). The worst thing is to increase risk unknowingly when stretching for yield.

Tough as the product it manufactures, the U.S. steel industry is forging ahead on many critical fronts.

IN THE 19TH CENTURY, WHEN ANDREW CARNEGIE MADE HIS FORTUNE IN STEEL, THE INDUSTRY WAS regarded as the backbone of the U.S. economy. Since then, increased competition from abroad, global price fluctuations, and economic tidal waves have taken their toll. ★ Once the world leader in all aspects of the business, the U.S. now ranks third in global steel production, behind China and Japan, both of which made further inroads into U.S. markets last year. ★ The American Iron and Steel Institute (AISI) estimates that imports of steel products reached 44.2 million net tons in 2014, up 37% from the 2013 total. Domestic steel production, according to the World Steel Association, was 7.9 million net

PROVING ITS METAL

tons in November 2014, up 1.5% compared with the same month one year earlier.

Thomas J. Gibson, AISI president and CEO, takes a realistic view: "There are bright spots in a number of steel markets—like the auto industry, which is expected to produce almost 17 million units in 2015, and the construction market, where nonresidential construction is slowly rebounding from the recession. However, imports, largely a result of unfair foreign-trade practices, captured more of the market this year, costing thousands of U.S. jobs throughout the steelmaking supply chain."

That, though, is only part of the story. Proving that it is as strong as the metal it produces, the industry is making steady progress in a number of key areas, with sustainability leading the way. The U.S. recycles more than 70 million tons of steel every year, says AISI's Steel Recycling Institute—more than paper, plastic, aluminum, and glass combined. The annual recycling rate for steel, says AISI, is 81%, adding that almost 80% of discarded appliances are recycled every year.

It's impossible to downplay the importance of these numbers. According to the U.S. Environmental Protection Agency, the recycling of iron and steel saves the country 74% of the energy that would have been needed to make new steel, or enough to power some 20 million homes for a full year.

To keep things humming on the technology side of things, Purdue University's Center for Innovation through Visualization and Simulation and 18 others are using a $480,000 grant from the National Institute of Standards and Technology for studies focused on finding long-term technological solutions for the steelmaking process. Working with a consortium of universities, nonprofits, manufacturers, and other stakeholders, the center will seek ways to make American steelmaking more efficient.

Thanks to advances on the R&D front, individual pieces of steel can now be engineered for highly specific end uses. New types of high-performance steel are having a major impact in all parts of society, improving the way everyone from jet pilots to surgeons do their thing.

"U.S. steelmakers are low-cost, efficient producers who adhere to the strictest environmental standards in the world," Burke Byer, president and CEO of Cincinnati's Byer Steel, recently wrote in support of legislation to bolster the steel rebar industry's competitive edge over other countries. "Given a fair chance," he concluded, "American steel companies and steelworkers can compete against any steel companies, anywhere in the world." ●

THE PRODUCT IS STEEL. THE STRENGTH: PEOPLE.

A robust network of independent companies helps keep Reliance Steel & Aluminum Co. nimble and agile.

The product may be steel, but the strength of the organization is its people. That's the secret behind the healthy and steady growth of Reliance Steel & Aluminum Co.

Headquartered in Los Angeles, Calif., Reliance provides metals processing, inventory management services, and a full line of more than 100,000 metal products to over 125,000 customers. With a reputation for speedy turnaround time, it has shown that a metals processing company known for tough and durable materials can be nimble and adaptable, too. Management ascribes its agility to a policy of acquiring companies across the country, then giving them the autonomy they need along with guidance and expertise from the head office.

RELIANCE STEEL & ALUMINUM CO.

"Our success lies in the fact that we recognized early on that our enterprise—not just Reliance's, but the industry as a whole—is really a local business," says CEO David Hannah. "The vast majority of our trade is conducted within a 200-mile radius of one of our companies. That means you have to give authority to your local management teams."

To that end, Hannah says that Reliance strives to keep the culture and spirit of each acquired company intact. The corporate office doesn't expect the companies Reliance purchases to share its precise culture, but they do need to be compatible.

"We don't change the names of the companies we acquire because the customer base has already established a relationship with a familiar brand," Hannah says. "We cause as little disruption as possible while still bringing our corporate resources to smaller, entrepreneurial-type companies."

Reliance President and COO Gregg Mollins adds that those in the field are uniquely equipped to understand the needs of the local market. At the same time, the network of Reliance companies can share information and form deep connections.

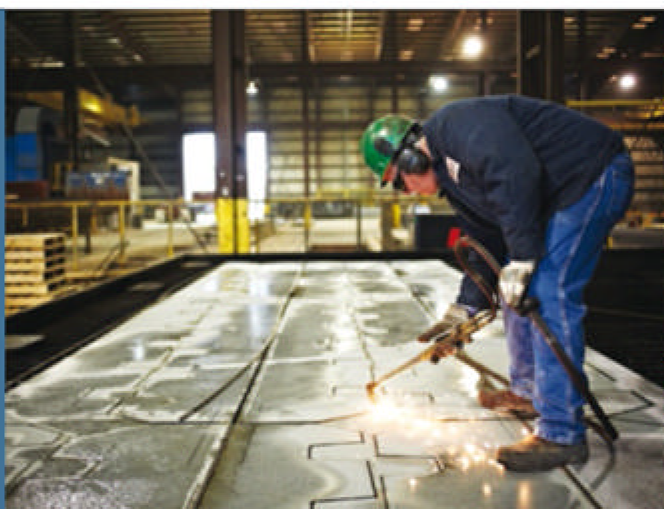
"Multiple companies do the same thing every day," Mollins says, "so we share best practices on the purchasing side, the sales side, and the processing side. Managers work together to improve their profitability. We hold meetings with warehouse supervisors, purchasing departments, and others so they can get to know one another and help solve mutual problems. It works very well for everyone involved."

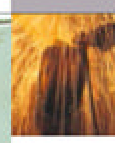
Like many other companies, Reliance, which employs almost 15,000 people globally, expects that up to 30% of its workforce will retire within the next decade. One of its approaches to finding replacement workers speaks to its values: Reliance has aligned itself with Workshops for Warriors, a San Diego, Calif. based non-profit organization that trains and certifies U.S. veterans in a variety of skills, then places them in advanced manufacturing careers.

"The Workshops for Warriors program provides a ready and able number of people who are young and willing to work," says Hannah. "They're training welders and machine operators in skills that can be used by our customer base, too. These veterans have served us well and sacrificed for the country. We owe this to them, but it's a win-win all around."

Left: Custom metals processing and just-in-time delivery are among Reliance's specialties.

Right: Reliance supports Workshops for Warriors' mission to train veterans for manufacturing jobs.





NEW ENERGY FOR MUNIS

CHEAPER OIL AND GASOLINE WILL BE A BOON TO MUNICIPAL BONDS THAT BENEFIT WHEN DRIVERS HIT THE ROAD. *By Janice Revell*

Energy bonds have been whacked by plunging oil prices lately. But at least one corner of the fixed-income market is now poised for outperformance thanks to the collapse of crude: municipal bonds backed by revenues from toll roads and airports. Americans are driving and flying more, boosting those transportation-linked munis. And that, say experts, has created an attractive buying opportunity.

Municipal bonds in general are appealing because their interest payments are exempt from federal (and sometimes state and local) taxes. And right now, munis represent good value, says Janney Montgomery Scott municipal analyst Tom Kozlik, whose firm rates municipal bonds as "our strongest conviction overweight call for 2015." High-quality, longer-term munis have historically yielded less than U.S. Treasury bonds of comparable maturities. But as of early January the average yield on triple-A-rated 30-year muni bonds was 2.7%, topping the 2.5% rate for 30-year Treasury bonds.

Tollway and airport debt is especially attractive now, says Michael Zezas, head of municipal research at Morgan Stanley. For starters, drivers are getting a big break at the pump. As of early January the average national retail price for regular unleaded gasoline had fallen by more than 40% since last summer, according to the U.S. Energy Information Administration. As a result, Moody's Investors Service estimates that toll-road traffic will grow by about 1.5% in 2015 and average toll revenues will rise by 5%, as operators hike rates.

Investors should also look at airport municipal bonds, which are tied to all the revenues (including fees from food concessions, parking, and rental car operators) an airport generates. The average U.S. household this year will spend $550 less on gasoline than in 2014, according to the EIA. And that increased discretionary income bodes well for airport travel, says Randy Gerardes, senior municipal analyst at Wells Fargo Securities. Gerardes also notes that for every 10% drop in aviation fuel prices, air travel increases by more than 10%. He is bullish "specifically on large international gateway airports with significant cargo operations."

You can buy individual municipal bonds through most brokerages. Large municipal issuers have roughly $400 billion in transportation-related debt outstanding, leaving investors plenty of choice. Some of the largest borrowers include the Port Authority of New York and New Jersey, the Bay Area Toll Authority (San Francisco), and the North Texas Tollway Authority. Zezas advises that investors avoid the lowest-rated junk issues and focus on investment-grade offerings.

An even simpler way to gain exposure to toll-road and airport bonds is to purchase the **Deutsche X-trackers Municipal Infrastructure Revenue Bond Fund,** an ETF that tracks an index of investment-grade infrastructure munis. Transportation-linked bonds currently make up about 54% of the portfolio. Continued low energy prices should help drive up the fund's returns.

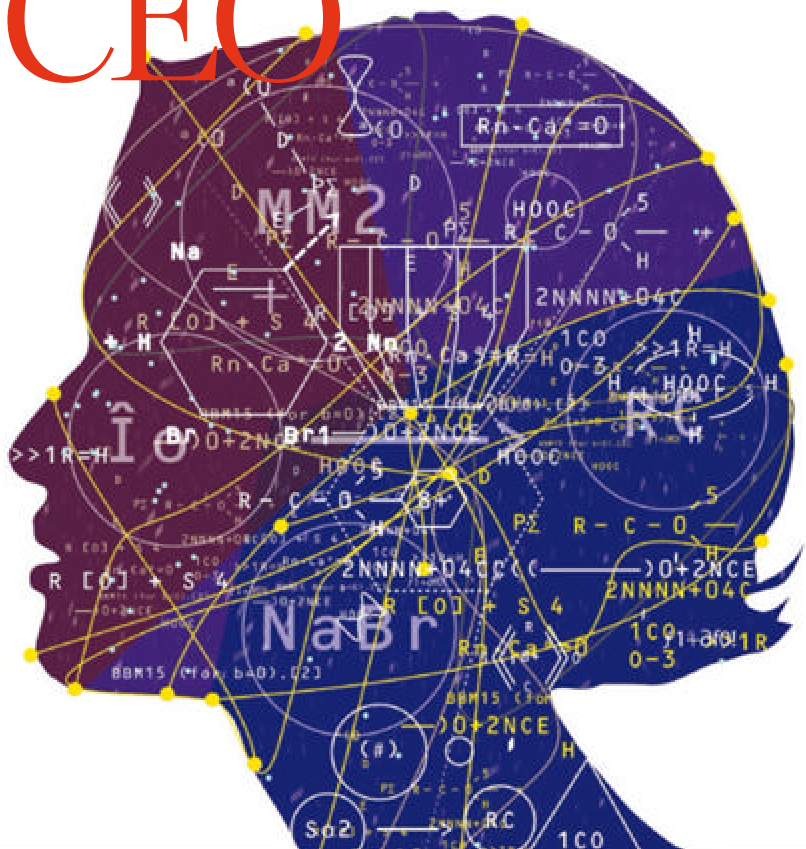
A former compensation consultant, Janice Revell has been writing about personal finance since 2000.

PORTRAIT BY JOHN WILSON

ILLUSTRATION BY **MARTIN LEON BARRETO**


Hot 50¢
Chocolate

The Algorithmic CEO



Get ready for the most sweeping business change since the Industrial Revolution. To thrive, companies—and the execs who run them—must transform into math machines.

By RAM CHARAN

THE SINGLE GREATEST INSTRUMENT of change in today's business world, and the one that is creating major uncertainties for an ever-growing universe of companies, is the advancement of mathematical algorithms and their related sophisticated software. Never before has so much artificial mental power been available to so many—power to deconstruct and predict patterns and changes in everything from consumer behavior to the maintenance requirements and operating lifetimes of industrial machinery. In combination with other technological factors—including broadband mobility, sensors, and vastly increased data-crunching capacity—algorithms are dramatically changing both the structure of the global economy and the nature of business.

Though still in its infancy, the use of algorithms has already become an engine of creative destruction in the business world, fracturing time-tested business models and implementing dazzling new ones. The effects are most visible so far in retailing, creating new and highly interactive relationships between businesses and their customers, and making it possible for giant corporations to deal with customers as individuals. At Macy's, for instance, algorithmic technology is helping fuse the online and the in-store experience, enabling a shopper to compare clothes online, try something on at the store, order it online, and return it in person. Algorithms help determine whether to pull inventory from a fulfillment center or a nearby store, while location-based technologies let companies target offers to specific consumers while they are shopping in stores.

Now the revolution is entering a new and vastly expansive stage in which machines are communicating with other machines without human intervention, learning through artificial intelligence and making consistent decisions based on prescribed rules and processed through

ILLUSTRATION BY **STUDIO TONNE**

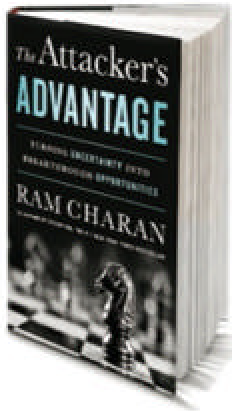
algorithms. This capability has rapidly expanded into potential connections between billions and billions of devices in the ever-expanding "Internet of things," which integrates machines and devices with networked sensors and software, allowing the remote monitoring and adjustment of industrial machinery, for instance, or the management of supply chains.

Take, for example, General Electric, which has already turned itself into a math house. It has assembled a staff in Silicon Valley to provide customers with advanced analytics that do such things as predict when equipment maintenance is due. As of the middle of last year, this quintessential industrial company had about two-thirds of its $250 billion backlog in orders from services based on its mathematical intellectual property.

Machine-to-machine communication and learning also help managers increase their capability and capacity and the speed of their decisions. The potential uses have barely been scratched, and the growth opportunities of this bend in the road can be immense for those who seize them.

The companies that have the new mathematical capabilities possess a huge advantage over those that don't. Google, Facebook, and Amazon were created as mathematical corporations. Apple became a math corporation after Steve Jobs returned as CEO. This trend will accelerate. Legacy companies that can't make the shift will be vulnerable to digitally minded competitors.

One of the biggest changes the algorithmic approach brings for both businesses and consumers is a rich new level of interactivity. The customer experience for many legacy companies is often secondhand or thirdhand. A company's offerings are, for example, bought by distributor X, which in turn sells to retailer Y, which sells to an individual—so the actual user is not the purchaser. In today's online math houses, by contrast, actual users are



Excerpted from *The Attacker's Advantage: Turning Uncertainty Into Breakthrough Opportunities* by Ram Charan. Published by arrangement with PublicAffairs, a member of The Perseus Books Group. Copyright © 2015

increasingly interacting directly with the company—buying and giving feedback without any intermediaries. The companies can track and even predict consumer preferences in real time and adjust strategies and offerings on the run to meet changing demands, which gives consumers leverage they never had before. The data accumulated from these interactions can be used for a variety of purposes. A company can map out in extreme detail all touch points of a user or buyer, gather information at each touch point, and convert it to a math engine from which managerial decisions can be made about resource allocation, product modification, innovation, and/or new product development. The data can also be used as a diagnostic tool—for example, it can reveal signals and seeds of potential external change and help identify uncertainties and new opportunities. It can point to anomalies from past trends and whether they are becoming a pattern, and help spot new needs or trends that are emerging and could make a business obsolete.

Indeed, the math house is shaping up as a new stage in the evolution of relations between businesses and consumers. The first stage, before the Industrial Revolution, was one-to-one transactions between artisans and their customers. Then came the era of mass production and mass markets, followed by the segmenting of markets and semi-customization of the buying experience. With companies such as Amazon able to collect and control information on the entire experience of a customer, the math house now can focus on each customer as an individual. In a manner of speaking, we are evolving back to the artisan model, where a market "segment" comprises one individual.

The ability to connect the corporation to the customer experience and touch points in real time has deep implications for the organization of the future. It speeds decision-making and allows leaders to flatten the organization, in some cases cutting organizational layers by half. A large proportion of traditional middle-management jobs (managers managing managers) will disappear, while the content of those jobs that remain will radically alter. The company's overhead will be reduced by an order of magnitude. In addition, performance metrics will be totally redesigned and transparent, enhancing collaboration in a corporation—or its ecosystems—across silos, geographies, time zones, and cultures.

To some degree, every company will have to become a math house. This will require more than hiring new kinds of expertise and grafting new skills onto the existing organization. Many companies will need to substantially change the way they are organized, managed, and led. Every organization will have to make use of algorithms in its decision-making. The use of algorithms will have to become as much a part of tomorrow's management vocabulary as, say, profit margins and the supply chain are today. And every member of the executive team will need to understand his or her role in growing the business.

Ram Charan is a veteran adviser to many Fortune *500 companies and co-author of the bestselling book,* Execution.

The Age of Unicorns

By Erin Griffith and Dan Primack

The billion-dollar tech startup was supposed to be the stuff of myth. Now they seem to be ...

... everywhere.

ILLUSTRATION BY MARC BURCKHARDT

TECH SPECIAL REPORT

The Age of Unicorns

Stewart Butterfield had one objective when he set out to raise money for his startup last fall: a billion dollars or nothing. If he couldn't reach a $1 billion valuation for Slack, his San Francisco business software company, he wouldn't bother. Slack was hardly starving for cash. It was a rocket ship, with thousands of people signing up for its workplace collaboration tools each week. What Slack needed, Butterfield believed, was the cachet of the billion-dollar mark.

"Yes, it's arbitrary because it's a big round number," says Butterfield, 41. "It does make a difference psychologically. One billion is better than $800 million because it's the psychological threshold for potential customers, employees, and the press."

Sure enough, in October—less than a year after the company released its namesake product—Slack announced the close of a $120 million round of financing. Its valuation? One billion dollars. Butterfield's wish had come true: Slack was the tech world's newest "unicorn."

It wasn't long ago that the idea of a pre-IPO tech startup with a $1 billion market value was a fantasy. Google was never worth $1 billion as a private company. Neither was Amazon nor any other alumnus of the original dotcom class.

Today the technology industry is crowded with billion-dollar startups. When Cowboy Ventures founder Aileen Lee coined the term unicorn as a label for such corporate creatures in a November 2013 TechCrunch blog post, just 39 of the past decade's VC-backed U.S. software startups had topped the $1 billion valuation mark. Now, casting a wider net, *Fortune* counts more than 80 startups that have been valued at $1 billion or more by venture capitalists. And given that these companies are privately held, a few are sure to have escaped our detection. The rise of the unicorn has occurred rapidly and without much warning, and it's starting to freak some people out.

"It used to be that unicorns were these mythical creatures," says Jason Green, a venture capitalist at Emergence Capital Partners whose investments include Yammer, which sold to Microsoft for $1.2 billion. "Now there are herds of unicorns."

Not content to run with the pack—or "blessing," as a group of unicorns is sometimes known—venture capitalists have begun targeting even bigger game. They're now hunting startups with the potential to rapidly reach a $10 billion valuation—or, as Green calls them, "decacorns." In late 2013 just one private company had crossed that threshold: Facebook. Now there are at least eight, including Uber, the on-demand car service worth $41.2 billion. Its valuation is higher than the market capitalization of at least 70% of the companies in the *Fortune* 500.

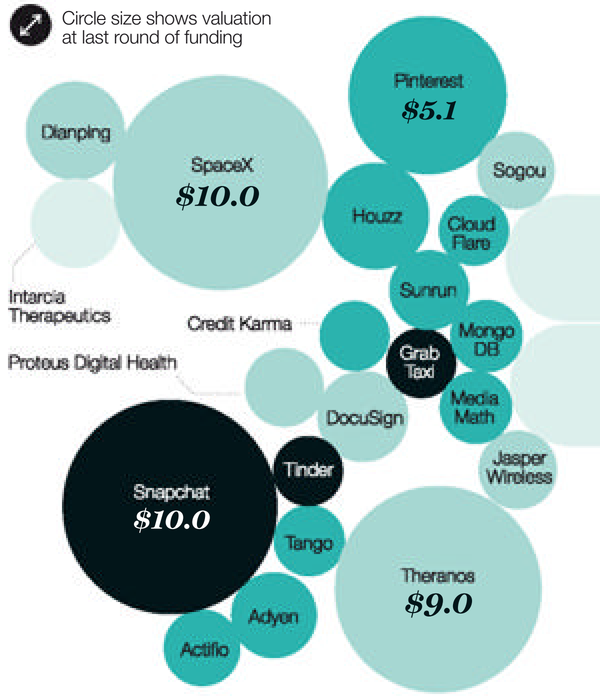
Flights of Fantasy

More than 80 startups are valued at $1 billion or more, according to data from PitchBook, CB Insights, news reports, and *Fortune* investigation. Here are some of them.

FOUNDING DATE

1995–'99 | 2000–'04 | 2005–'09 | 2010–'13

Circle size shows valuation at last round of funding



What does having a $1B+ valuation mean to you and your company?

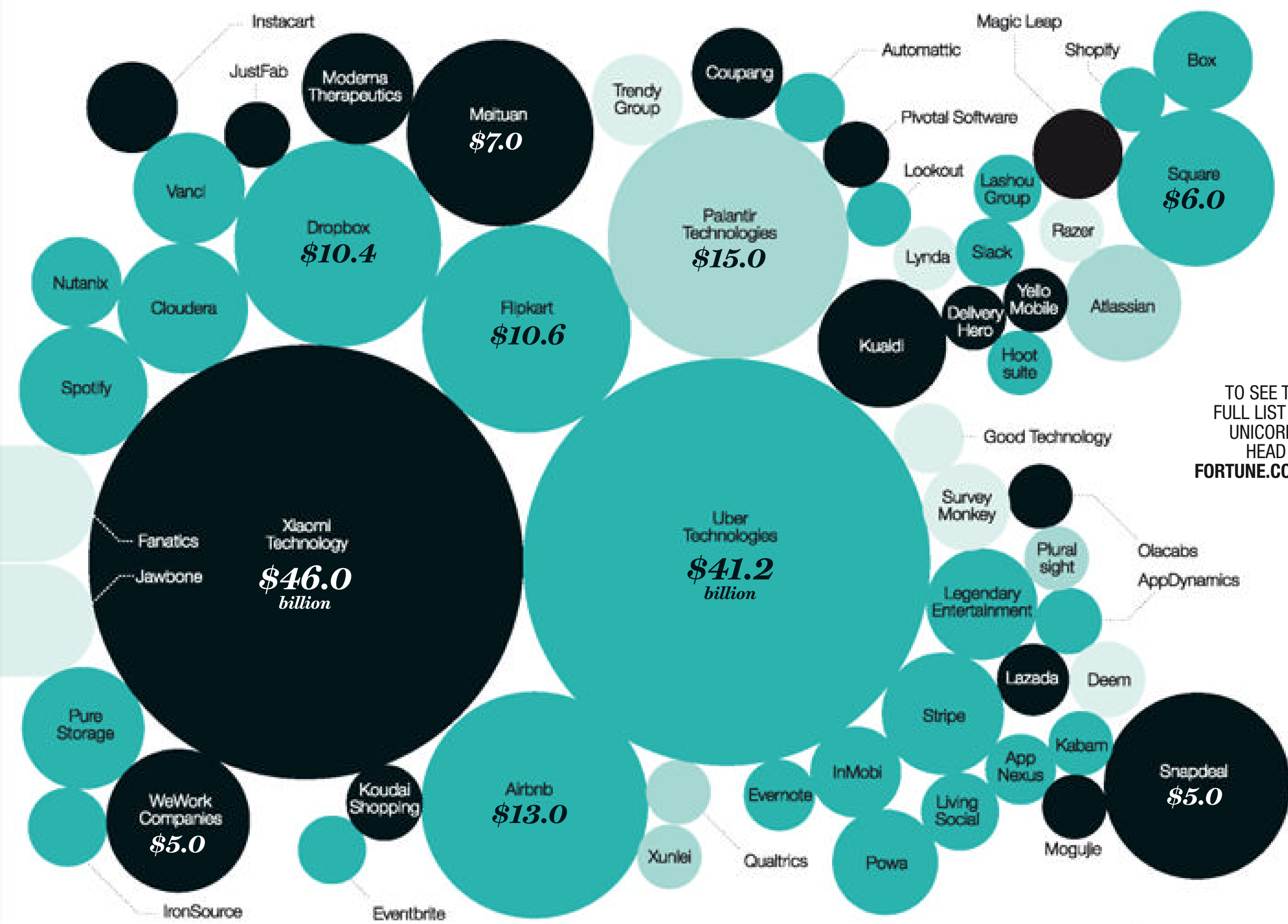
HOUZZ
Adi Tatarko, CEO

While it's nice to get this recognition, it doesn't change the way we operate day to day. It's still a crazy roller-coaster ride with a lot of hard work.

CREDIT KARMA
Ken Lin, CEO

A billion-dollar valuation can be a double-edged sword. On one hand, it's great for recruiting, brand recognition, and employee morale. On the flip side, big valuations often lead to more scrutiny from outsiders.

ADDITIONAL REPORTING BY DANIEL ROBERTS AND DEENA SHANKER



TO SEE THE FULL LIST OF UNICORNS, HEAD TO **FORTUNE.COM.**

Technology is driving the boom. Smartphones, cheap sensors, and cloud computing have enabled a raft of new Internet-connected services that are infiltrating the most tech-averse industries—Uber is roiling the taxi industry; Airbnb is disrupting hotels. Investors see massive opportunity in the upheaval.

Then there are the broader financial trends. A nearly six-year-old raging bull market in public stocks has produced a tailwind for private company valuations and convinced the latest crop of tech entrepreneurs that there will be plenty of time to cash in when they feel like it. Record-low interest rates also have caused some big institutional investors to search for returns in the high-risk, high-reward world of venture capital. Add to that a lack of regulation: After the passage of the JOBS Act in 2012, which aimed to make it easier for small businesses to raise capital, startups could take on many more investors before the Securities and Exchange Commission effectively forced them to go public.

Finally, there is the intangible element of perception. In the startup world, a valuation of $1 billion says that you're no longer a fly-by-night startup with plans to quickly sell out to Google.

"It absolutely gives us credibility and the ability to hire some very important people," says Apoorva Mehta, the 28-year-old CEO of on-demand grocery delivery service Instacart, which has been in business for only two years but reportedly is valued at $2 billion. "And it tells the world that we're looking to build a long-lasting worldwide brand instead of looking to get acquired."

Venture capitalists justify these soaring valuations by looking backward. After the dotcom crash, a wave of prudence swept over the Valley. Investors kept valuations low and tried not to overcapitalize their companies. That strategy lasted until Hurricane Facebook came along. All of the cautious types who passed on investing in the social network early, because it was too expensive at $250 million or $500 million, were left scarred and paranoid when it went public in May 2012 with a market cap of $104 billion. If a startup is going to be worth

It's kind of like opening a healthy lead halfway through a marathon: It's better than being behind, but now everybody's gunning for you.

APPNEXUS
Brian O'Kelley, CEO

TATARKO: DAVID PAUL MORRIS—GETTY IMAGES

billions of dollars in a few years, why quibble over a few million on the entry price?

As a result, the median valuation of a Series A round of funding soared 135% between 2012 and 2014, according to the law firm Cooley LLP. This has created an echo effect, with new gains setting the bar higher for each subsequent round of funding. So venture capitalists have recruited unlikely new partners in the form of traditional money managers such as Fidelity Investments (which led the latest deal for Uber) and Wellington Management (which backed DocuSign and Moderna Therapeutics) to support unicorn-level rounds. Call it trickle-up economics.

It also doesn't hurt that American corporations have record-breaking stockpiles of cash on their balance sheets. Facebook set tongues wagging when it paid $19 billion for instant-messaging startup WhatsApp last March, then followed it up a month later by shelling out $2 billion for virtual reality headset maker Oculus VR. In 2014, Google paid $3.2 billion for smart thermostat maker Nest, Apple acquired headphone maker Beats for $3 billion, and Microsoft spent $2.5 billion to own the Swedish gaming startup responsible for *Minecraft*. Even health care VCs cashed in, selling Seragon Pharmaceuticals to Genentech for upwards of $1.7 billion.

All of this has begun to feel bubblicious, especially to those who lived through the last cycle. "If you are a CEO today and you're age 35 or below, you did not go through 2000, which means you have not actually seen the capital markets shut off," says venture capitalist Marc Andreessen, who nonetheless remains bullish. "People who went through 2000 are psychologically scarred and arguably have been risk-averse for the last 15 years. If you didn't go through it you're in danger of always believing you can raise money at a higher valuation."

Greycroft Partners founder Alan Patricof, who has been investing in startups for more than four decades, is wary. "People are buying traffic growth and revenue growth, but it's the 'emperor has no clothes' theory," he says. "At some point all of these companies will be valued on a multiple of Ebitda. If the IPO market goes away, or for any reason there's a blip in the outlook, people could be left holding a lot of inventory they wish they didn't have."

Proponents of the unicorn boom posit that this time—no, seriously!—is different. Many of the billion-dollar startups, they argue, have the actual customers and revenue that companies of the dotcom days lacked. But no one in the VC world is so sanguine as to suggest that, sooner or later, we won't experience a market pullback.

Not surprisingly, many venture capitalists have begun preaching caution to their portfolio companies. A brief swoon in publicly traded tech stock prices last April—particularly in the enterprise sector—was seen industrywide as a warning shot that startups should control their "burn rates" and raise as much new money as possible to protect against a future funding drought. Entrepreneurs listened, at least to the second part: U.S.-based companies raised more venture capital in the fourth quarter of 2014 than they did in any other quarter over the prior 13 years, according to the National Venture Capital Association.

That explains, in part, why a company like Instacart raised $120 million in new funding

+ TO HEAR MORE FROM UNICORN CEOs, HEAD TO **FORTUNE.COM**

What does having a $1B+ valuation mean to you and your company?

APP DYNAMICS
Jyoti Bansal, CEO

It's like making the playoffs—we haven't won the championship yet, but a "W" is in sight. The biggest mistake people can make in these situations is to celebrate and forget that there are still more big and important games ahead.

ACTIFIO
Ash Ashutosh, CEO

The analogy we use is when you see a duck on water. It looks smooth and easy on top, but underneath it's paddling like hell. You've got to work extra hard to make it look extra easy.

POWA
Dan Wagner, CEO

If you start believing your own hype, you get distracted. As far as I'm concerned, the business is worth nothing until we've proven the value that we set out to create. The investment is just a sign we're on the right path.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Network details & coverage maps at vzw.com. © 2015 Verizon Wireless.

earlier this month at its reported $2 billion valuation just six months after raising $44 million at a $400 million valuation. Or why social media company Pinterest raised $625 million over three rounds of funding between February 2013 and May 2014, doubling its valuation from $2.5 billion to $5 billion.

But more aggressive fundraising is no guarantee that unicorns will grow into their valuations. “Going from $0 to $50 million in revenue is a lot different from going from $50 million to several hundred million,” says Green. “A lot of folks don’t make that transition. Most don’t. Maybe half of those companies won’t fulfill their potential.” (For a look at a startup struggling to break through, read the following story on Jawbone.)

Several unicorns have already experienced a pullback. Open-source software company Hortonworks was valued at $1 billion by private investors but lowered its market cap to $666 million when it went public last December. (It has since crossed back over the $1 billion mark in market value.) Box, the data storage company credited with making enterprise technology cool, was preparing to hold an IPO just days after this magazine went to press. Its initial valuation was expected to be at least 30% lower than the $2.4 billion it commanded from private investors like TPG Capital last summer.

And then there is Fab, the design-focused e-commerce site that said it would generate $250 million in revenue in 2013. It ended up bringing in around $30 million. (At one point, it burned as much as $14 million per month.) Fab shrank from 750 employees to 150, and CEO Jason Goldberg repositioned the company as a custom furniture business. Fab was widely reported to have raised some of its $336 million in funding at a $1 billion valuation, but Goldberg acknowledges to *Fortune* that its valuation never actually topped $875 million. He acknowledges the company isn’t worth close to that today. “If you allow yourself to believe you’re worth $1 billion after two to three years of being in business, you’re going to get yourself caught up in trouble,” Goldberg says.

Even in the best of times, of course, startup investing is high risk. As quickly as the Age of Unicorns arrived, the conditions that created it could reverse and leave entrepreneurs and investors wistful for what might have been.

“I think you’re going to see a lot of failure in 2015,” says Benchmark Capital partner Bill Gurley, who sits on Uber’s board of directors. “If you’re a public company worth $3 billion and your stock trades down to $1 billion, you can survive it because you can still issue options to hire new employees, etc. If it happens when you’re private, though, it becomes immediately harder to hire or to get incremental investment.”

In the meantime, expect more billion-dollar startups to emerge—at least for now. “You can’t choose not to play,” Gurley says. “If you’re in the enterprise segment and your competitors are raising $150 million at high valuations and pouring it into sales, you either can do something similar or be conservative and no longer matter.” Which might explain why some VCs continue to invest even as they predict failure. There’s always the hope and belief that the value created by a few successful unicorns will offset the losses of those that fail.

Butterfield knows the easy venture money will dry up at some point. It’s one reason Slack has spent only 1% of the money it’s raised. “You’d have to be in a meteors-hitting-the-Earth scenario before Slack as a business would get into trouble,” he boasts. Staying thrifty is a smart move. The prestige of being a unicorn diminishes with each passing quarter. When it’s gone, he’ll have a whole new fantasy to chase: profitability.

King of the Unicorns


Xiaomi CEO Lei Jun

IMAGINE CHINA

THE BIGGEST UNICORN of all lives in the Middle Kingdom. If you haven’t heard of Beijing-based smartphone maker **Xiaomi,** get ready—its swift rise has the potential to be the biggest thing brewing inside China since Alibaba’s IPO.

In China, Xiaomi’s cheap phones (its Redmi 2 costs $115) are hotter than Apple’s. But Lei Jun, Xiaomi’s founder and CEO, isn’t stopping there. He’s working to create a universe of Xiaomi products by expanding into categories as diverse as air purifiers and Internet TV boxes. The company just raised money at a $46 billion valuation. Yuri Milner, the Russian venture capitalist who bet on Facebook in 2009, is one of the prominent investors backing what he calls the next $100 billion company.

China has several impressive billion-dollar-plus startups. Dianping is a Yelp-Groupon mashup with 190 million monthly active users; Mogujie is a Pinterest clone favored by the country’s fashionistas; Koudai Shopping connects online shops with users on China’s most popular social network, WeChat. With online retail in the country expected to pass $500 billion in 2015 from just $200 billion in 2012, China is a supersize incubator for growth and fertile pasture for unicorns to graze.
—Scott Cendrowski

Jawbone CEO Rahman, 38, is a much-loved figure in the Valley's "bro-grammer" culture.

By Adam Lashinsky

The Trials of a 16-Year-Old Can't-Miss Startup

Jawbone, led by charismatic CEO Hosain Rahman, has long captivated some of Silicon Valley's savviest investors with inspired design and innovative products, such as the UP fitness tracker. It has also been plagued by execution blunders. Now it's losing market share in its key businesses and facing a daunting new competitor in Apple. Can the VC darling ever live up to its promise?

PHOTOGRAPHS BY IAN ALLEN

Yves Behar (right), with prototypes of the UP3 fitness tracker, is Jawbone's chief creative officer, but he also works with clients such as Herman Miller and Samsung.

The Jawbone File

FOUNDED: **1999 by Hosain Rahman and Alexander Asseily**
HEADQUARTERS: **San Francisco**
EMPLOYEES: **450**
PRIVATE MARKET VALUATION: **$3 billion–plus**

T**he first thing you notice** about Hosain Rahman, CEO of the much-buzzed-about gadget maker Jawbone, are his wrists. A big, hirsute, 38-year-old bear of a man, the Jawbone CEO has forearms that are a colorful study in self-expression. Both wrists sport multihued, braided bracelets, gifts from his small children. Below his left hand Rahman wears a massive gunmetal International Watch Co. timepiece, which he sheepishly acknowledges gives off a flashy, rich-guy vibe. On his right wrist is a gray UP3 fitness-tracker bracelet, his company's latest offering.

The UP3 boasts a heart-rate monitor, the newest innovation in the "wearables" market that Jawbone helped pioneer. It isn't available yet. A production glitch caused Jawbone to sit out the critical Christmas selling season. But to hear Rahman tell it, the delay is merely another hiccup. The wellness-tracking device is the embodiment of everything his company stands for: elegant design, hardware-meets-software functionality, and breakthrough data analysis that will change how users live their lives. "The things that we wear are expressions of who we are, whether they're highly functional or they're ornate or they're made of valuable textiles," says Rahman. The message is clear: Those who wear an UP are cool, confident, and healthy.

Magical pronouncements roll off Rahman's tongue, calling to mind the silvery phrasemaking Steve Jobs once deployed to sell his wares. Rahman, who speaks in the raspy, low-octave tone of a jazz-station DJ, is holding forth on a crisp January day in the Rugby conference room of Jawbone's open-plan headquarters in the edgy Potrero Hill neighborhood of San Francisco. (L.A.-bred Rahman and his co-founder, Alexander Asseily, who grew up in Beirut and London, met playing rugby at Stanford.) Whiteboards with strategic doodles surround the room, which Rahman uses as his de facto office. Black drapes cover a hush-hush prototype against one wall, a favorite Jobs flourish. It's all very Apple circa 2001, complete with the bold predictions. Says Rahman: "Everything we've done over the last 15 years has been in preparation for what we're about to do."

Jawbone turns 16 this year. That's an eternity for a Silicon Valley company to remain a startup: Most either go public or go away. In Jawbone's case, it's also a bona fide "unicorn," the name given to privately held tech companies with billion-dollar valuations that in an earlier era would have an IPO under their belt. (Jawbone raised money last year at a valuation of more than $3 billion.)

The company maintains a high profile. It has pioneered three consumer-electronics categories: Bluetooth cellphone headsets, wireless speakers (the popular Jambox), and fitness trackers. Rahman is a well-loved figure in Silicon Valley's "bro-grammer" culture, a friend to nearly every A-list entrepreneur and investor, and a fixture on the tech-conference circuit. (The similarly burly Salesforce.com CEO, Marc Benioff, calls him his "brother from a Pakistani mother.") Equally prominent is his friend and sidekick Yves Behar, Jawbone's part-time chief designer. Behar, who sold a controlling interest in his firm Fuseproject last year to a Chinese marketing outfit, is involved in ventures that include working on television design for Samsung and co-founding the company that makes the trendy August home "smart" lock.

Jawbone's travails are the stuff of startup legend. Born from hard-science coursework at Stanford—Asseily's, not Rahman's—Jawbone has endured multiple ups and downs, survived near-death experiences, raised more than $400 million from Sand Hill Road's boldest-face names, and placed itself repeatedly at the center of the cultural zeitgeist where consumer behavior meets advancing technology. "It's a unique company that has a unique set of capabilities," says Andreessen Horowitz's Ben Horowitz, a Jawbone director and one of its earlier backers, a blue-chip list that now includes Khosla Ventures, Sequoia Capital, Kleiner Perkins, Silver Lake Partners, and BlackRock.

For all its accomplishments, though, Jawbone remains on the verge. It is no closer to making money today—with 450 employees and hundreds of millions in revenue—than it was more than a decade ago, when it was scraping by on government grants. Execution misses and slow-footed strategic moves have left Jawbone vulnerable to disciplined competitors, including the surging Fitbit. Indeed,

Three Steps Back

LAST YEAR EACH OF JAWBONE'S MAJOR PRODUCTS LOST MARKET SHARE VS. THE COMPETITION.

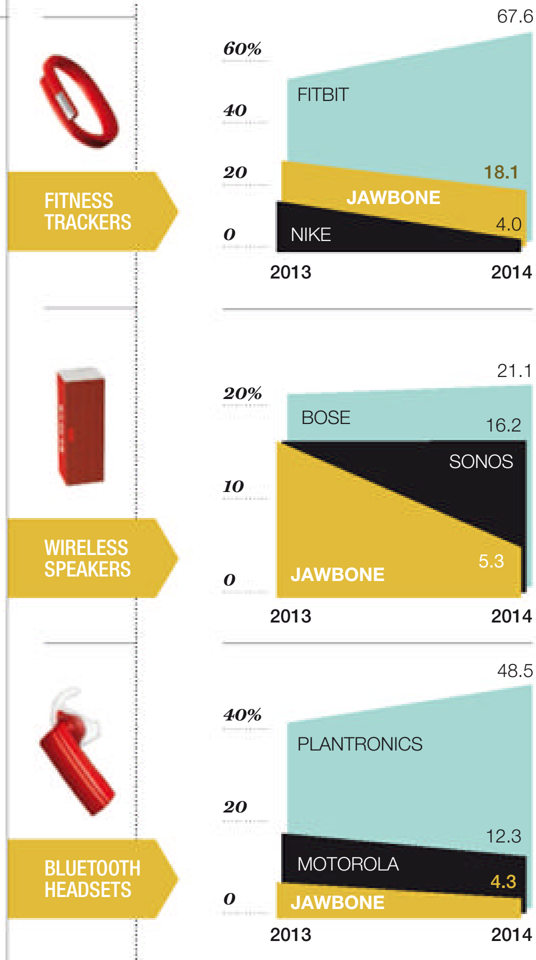

CHART SOURCE: THE NPD GROUP, DECEMBER 2012 TO NOVEMBER 2013 AND DECEMBER 2013 TO NOVEMBER 2014

despite all the money it has raised and its patina of success, Jawbone continues to scramble for cash and struggles to ship a quality product on time. And that's all before Apple itself pounces on the wearables market with its eagerly awaited Apple Watch. Jawbone's vision and style are groundbreaking. Whether it can avoid being left behind in the very categories it created is another matter altogether.

When Alexander Asseily arrived at Stanford in 1993, he was interested in art, not engineering. Practicality won out, however, and before long he was studying product design and mechanical engineering. For his senior thesis he designed a futuristic contraption straight out of "Dick Tracy." "I had a diagram of a wrist-worn communicator connecting to a headset," he says, a diagram he would later incorporate into a business plan for the company that became Jawbone. The work was interesting but too forward-looking for his professor. "The irony of all this is that I got a B– in the class," he says.

Like many scientifically oriented Stanford students, Asseily caught the startup bug and, together with his friend Rahman, decided to see if there was a product to be had from his research. A professor introduced the pair to scientists at the nearby Lawrence Livermore National Laboratory who were working on voice-recognition technology. Unsure what they wanted to build, the group recognized they had intellectual property that could be used for noise suppression, which happened to be of great interest to the U.S. Defense Department. "They wanted high-reliability, low-detectability speech transmission in high-noise environments," says Asseily.

The Stanford duo and a Livermore scientist they recruited ended up with grants from the U.S. Navy and DARPA, the Pentagon's research arm whose precursor had funded the creation of the Internet. Recognizing that what might work on the battlefield would be equally useful in an automobile, the small team decided to build a headset that would employ technology to block background noise. (Its eventual trademarked name had a martial flair: NoiseAssassin.) They formed a company, AliphCom, evoking the first letter in the Hebrew and Arabic alphabets with a wink toward speech communication. Early on they turned down an offer to sell out to headset leader Plantronics. Like all good entrepreneurs, they believed they were onto something.

What they were onto was good enough to get a meeting with Steve Jobs in 2004. Unfortunately, he savaged their product, a headset that connected via a wire and a clip to a cellphone. Recalls Rahman: "Steve said, 'The only place anyone would ever use a clip like that is in your mind.'" Jobs was right. Rahman and Asseily introduced their headset that year to favorable reviews, but the product flopped. By then they had recruited Pat McVeigh, a seasoned hardware executive who had worked at Palm as CEO. They had also attracted a modest investment from Mayfield Fund, an old-line Silicon Valley venture firm. When the headset failed, though, Mayfield threatened to close the doors, and another DARPA grant helped keep the company afloat. Most of the employees left, including McVeigh. Rahman calls that period Jawbone's "nuclear winter."

In retrospect, they were Jawbone's salad days. Its tiny, scrappy team toiled away on what would become a breakthrough product,

a wireless headset with notably quiet sound. Funding remained a problem, however, and Rahman became adept at keeping creditors at bay. At one point during 2006, Asseily persuaded a group of watch dealers in Birmingham, England, to invest $500,000, but only after taking them to the factory in China where the headsets were being made.

The team's big break came just before Christmas in 2006. Cingular Wireless (now AT&T) had agreed to stock the headsets in its retail stores. But AliphCom had again run out of cash, and the company that made the devices wouldn't release them unless it was paid. The founders persuaded early AliphCom investors, including Chris Burch (the former husband of fashion designer Tory Burch) and publishing heir Austin Hearst, to extend a line of credit, triggering the shipment to Cingular.

The Bluetooth headset was a hit, millions of dollars flowed into the young company, and suddenly venture capitalists were begging to invest. "In January 2007 everyone came out of the woodwork and said, 'We love you,'" recalls Asseily. After eight years of trying to build a business, the founders heard the message loud and clear.

AliphCom was the proverbial overnight success. Hands-free driving laws in multiple states sparked a run on wireless headsets. The company racked up millions in sales and recorded sizable profits in 2007 and 2008. By this time Asseily had begun to step away from the active management of Jawbone, and he eventually returned to London. Rahman, now CEO, began an epic run as a fundraiser, attracting Horowitz (in his pre–Andreessen Horowitz angel-investing days); Vinod Khosla (Rahman: "With Vinod, for the first time in my life I was with someone who made my ideas seem small"); and Sequoia Capital's Roelof Botha, a former PayPal finance chief.

Flush with success, Rahman quickly became one of the leading lights of the burgeoning tech scene in Silicon Valley. He grew up in Southern California, the second son of an engineer father from India who designed chemical refineries and a physicist mother from Pakistan. Between accompanying his father on far-flung work projects and visiting various family members who'd left the Indian subcontinent, Rahman saw the world at a young age. "I remember flying into Hong Kong when the airport was in the middle of the city," he says. He attended the Webb boarding school in Claremont, Calif., and landed at Stanford when Larry Page and Sergey Brin were computer-science teaching assistants and Marissa Mayer had just arrived from Wisconsin. (She lived in the same freshman dorm and today is a Jawbone director.)

Such connections and a natural gregariousness—Rahman is a hugger in the land of the fist bump—boost his celebrity status in the tech community. "One thing we all really admire about Hosain is is how he has reinvented his business multiple times with category-defining products," says Drew Houston, CEO of storage startup Dropbox.

Jawbone helped create a market for portable Bluetooth-enabled speakers with its colorful and compact Jambox.

Events, both technological and otherwise, certainly have had a way of conspiring against Jawbone. Hands-free driving was a boon to the company—which began using the name Jawbone in 2008, after a version of its Bluetooth headset—but it also spurred automakers to improve their in-car Bluetooth functionality. The financial crisis hit Jawbone as hard as everyone else, and sales dried up in 2009, taking the company off what would have been an expected IPO trajectory.

In its labs and design shops, however, the company had other products in the works. First, in 2010, it came out with the Jambox wireless speaker, creating an entirely new consumer category. It introduced multiple versions of its headsets and speakers, in different sizes and colors. In 2011 it released the UP fitness tracker, again to critical acclaim. As the ability to monitor fitness and sleep caught the public's imagination, "wellness" gradually became the company's primary thrust.

Then the pattern repeated itself. A production snafu caused the UP to malfunction, and the company offered to refund the full price for any customer who wanted one, even if there was nothing wrong with the product. Jawbone was


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essentially out of the fitness-tracker market in 2012 as it retooled its product line and raised more money to push forward.

Even as Jawbone recovered, however, its product remained plagued by unreliability. One reason is its ambitious design, stringing wiring throughout its rubbery band. Bending puts wear and tear on electronics, and users often send their UP bands back for replacement under warranty. The demo model the company supplied *Fortune*, for example, stopped taking a charge after a few weeks, so it ended up where broken watches typically do—in a dresser drawer rather than on a wrist.

When James Park and co-founder Eric Friedman started Fitbit, it was hardly a lock for future success. "We actually knew nothing about hardware," says Park, a soft-spoken, hoodie-wearing 38-year-old who dropped out of Harvard before completing his computer-science degree. Park worked at Morgan Stanley for a time, founded a startup that went bankrupt, and then started another that he sold to CNET for an amount not worth bragging about.

Park was a gamer, however, and in 2006 he waited outside Best Buy to be among the first to buy a Nintendo Wii gaming console. He and Friedman fell in love with the product in a way only computer scientists could. They realized the Wii had sensors—accelerometers, to be precise—that were so good and so inexpensive that for the first time they could be put into consumer products. "We got to thinking about a 'magical device' that could track all your fitness," says Park.

Much like Jawbone in its earliest days, the Fitbit founders toiled away for two years with a tiny group of employees. They decamped to Asia for months at a time to build trust with the company that would manufacture their product. By 2009, when Fitbit launched its first fitness tracker, the founders had raised a paltry $2.6 million. Five years later Fitbit is the market leader, with 68% of the North American market for fitness trackers last year, and it is widely expected to sell shares in an IPO this year. To date it has raised $66 million, none from the sort of VCs whose names in a news release make people take notice. Says Park: "Some of our peers have raised 10 times that."

The contrast with Jawbone goes well beyond its capital efficiency. Park redefines "unassuming," as does Fitbit's office space in a less-than-hip downtown San Francisco office tower. Fitbit started not with a bracelet but rather with a clip-on device, which it discovered was popular with women, who liked to clip the gadget to their bras. Most of Fitbit's early sales were from its own online store, and it expanded its product line quickly. "Our strategy from early on has been that there is no one size fits all, so we have tried to be first with lots of them," says Park. He says his experience of having lost a startup to bankruptcy made him careful with expenses. Still, Fitbit is an aggressive marketer, with a slick television campaign throughout Christmas and multiple corporate partnering programs.

Fitbit has also had problems. A popular model caused an allergic reaction for some users, triggering a costly recall in 2014. Yet Fitbit had enough other products—including a connected scale, the Aria—so that it quickly recovered from the recall and shot ahead of Jawbone in market share. Like Jawbone, Fitbit announced new products this past fall: a heart-rate-monitoring version of its main tracker and a smart watch to compete against Apple's. Fitbit's new products weren't available for Christmas, but unlike Jawbone it hadn't suggested they would be.

Fitbit isn't Jawbone's only problem. Wireless headsets have become a commoditized business, and Jawbone has lost ground to the competition. In speakers, Jawbone took an industry by surprise but in the process awakened a sleeping giant in Bose, which is spending heavily to protect its turf and has regained a leading share. (Jawbone's has dwindled to 5% in the U.S.) Some speculate that Jawbone will dump its non-health-related products. Asseily, still Jawbone's chairman, suggests that such moves would be "painful" but perhaps prudent. "Over the last year we've come to terms with the fact that our future value is focused on wellness," he says. "Audio is great, and I think our audio products, particularly Jambox, are sexier. But it's not as big a market."

For a company that has had so many ups and downs, it should come as no surprise that Jawbone is in the midst of what technology companies like to call a pivot. It has begun hiring prodigious numbers of software engineers and data scientists, all to make the applications that connect users with its UP devices more magical—and functional. Rahman refers to the UP as a "24-hour context engine." Users "engage" with their UP for 23 hours a day, he says, compared with 15 minutes for Facebook. (Facebook's engagement time landed it more than $12 billion in revenue last year.)

The results so far are impressive. Jawbone has devised ingenious content to go with its app that truly prods users to eat better, exercise more, and pay more attention to the quality of their sleep. This content, in turn, offers opportunities for big brands to pay Jawbone to reach its active users, which number, Rahman says, in the "many millions." Quaker Oats and skin-care-products maker Lab Series, for example, have paid to include messages in Jawbone's app, which Rahman calls "brand activation" content rather than advertising. "I think of hardware as a customer-acquisition device," he says. "We'll know similar things to Facebook."

The vision is compelling, although still in its early days, says Rahman. It's true that by collecting information from a willing customer's body, Jawbone would have tremendously valuable data. Rahman says his dream is that Jawbone's device-to-services revenue mix would be fifty-fifty. Says Rah-


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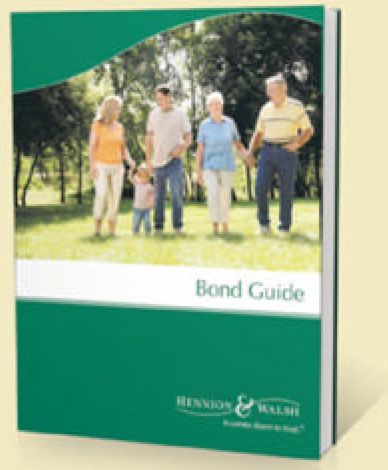

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man: "I tell Tony"—referring to Tony Fadell, creator of the Nest "learning" thermostat, which he sold to Google for $3 billion—"the Nest doesn't know if you're hot or cold. I will."

The problem is that making money on content tied to Jawbone's hardware is a classic chicken-and-egg problem. Hardware doesn't make money for Jawbone today—as a private company, it won't disclose any financial information—and its "brand activation" programs are nascent. "Hosain is trying to build a razor-and-blade business, but razors lose money, and his blades don't exist," says one close observer of the company.

In the meantime, the challenges of running such a business amount to a high-wire act. In early 2014, Jawbone agreed to an investment of $250 million by investors associated with Rizvi Traverse, a low-profile firm that made a bundle investing in Twitter. For reasons neither side will comment on, the full amount of the investment never materialized, forcing Rahman to scramble yet again to raise new funds. In August the prominent contract manufacturer Flextronics sued Jawbone for breach of contract and claimed in a lawsuit, since settled, that Jawbone's "perilous" financial position prevented it from paying Flextronics $20 million it was owed. Flextronics declined to comment. Without addressing specifics, a Jawbone spokesman said the suit's quick resolution shows that it was merely a "miscommunication between two partners."

The low point of a difficult year for Jawbone came in December, when it said that the UP3, announced the previous month, would not ship to customers by year-end, as promised. Jawbone offered a $40 discount to customers who had ordered it, slashing profitability for its $180 marquee product before it even hits store shelves. Rahman says a "sealing" problem caused the delay, a reasonable enough excuse, but one that raises the question of why Jawbone promised availability in the first place. Says Rahman: "We felt like it was ready."

Jawbone knows well that both its fans and investors are ready for results. "My hope is that we can go from an organization that produces sizzling products to an organization that also is a predictable and healthy business in the traditional sense of the word," says Asseily.

Rahman, though, speaks of Jawbone's newest strategy in loftier terms. "I think of it now as at the intersection of beauty," he says. "We are making beautiful objects that people are emotionally engaged with, the way they are with a vintage watch that their grandfather gave them, or a piece of jewelry that makes them feel beautiful about themselves or is a self-expression. The whole mission is to give people a better life, whether that's the ability to consume media in a higher-quality way off a mobile device or to know things about yourself and figure out how to use all that data to improve your life." It's an inspiring vision. Now, at last, Rahman has to deliver on it. F

FEEDBACK *alashinsky@fortunemail.com*

Where Is Big Tech Headed?

By Adam Lashinsky

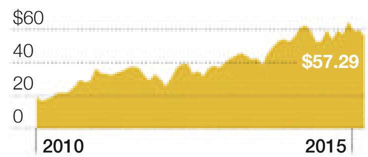
We're in the early stages of a data-science revolution, says Salesforce.com **CEO Marc Benioff.** Executives in every type of business need to embrace the disruption and finally get serious about cybersecurity.

To stay stimulated, Benioff likes to be around creative people. "That's a way that I ideate."

M **Marc Benioff, the founder and CEO of Salesforce.com,** has a knack for trend-spotting. He's also a born marketer, with an uncanny ability to draw attention to subjects near and dear to him, of which there are many. He was among the first to foresee large software programs moving to the "cloud"—a concept he played a large role in popularizing—referring to inexpensively rented software sitting remotely on a network rather than on its owner's computer. He was a heavy user of social media applications such as Facebook and Twitter well before other executives recognized their business potential. And from the founding days of Salesforce .com 16 years ago, Benioff, 50, committed himself, his company, and his employees to charitable work, making him a role model for other businesspeople. In two interviews conducted in January—first at a dinner hosted by *Fortune* during the Consumer Electronics Show in Las Vegas and then a few days later at his San Francisco home—Benioff opened up about a variety of topics, including how data science will affect everyone's business, where his ideas come from, why security should be companies' top priority (above even customer-service software), and how he is working with Microsoft's new CEO, Satya Nadella. Edited excerpts:

PHOTOGRAPH BY DAN ESCOBAR

Salesforce.com By the Numbers



SALES*: $5.1 billion
NET LOSS*: $314 million
MARKET CAP (JAN. 20): $36 billion
5-YEAR AVERAGE ANNUAL STOCK RETURN: 27%
EMPLOYEES: 15,500
*Past 12 months

SOURCES: S&P CAPITAL IQ; FACTSET; SALESFORCE.COM

What's the most important trend you see right now in the technology industry?
We're in an AI spring.

You mean artificial intelligence?
Yes. For our company, and I think for every company, the revolution in data science will fundamentally change how we run our business because we're going to have computers aiding us in how we're interacting with our customers.

What's an example of a company that's using data well?
You probably don't have to go very much further than looking at Uber and asking, "Why would Uber have all these data scientists?" Well, they want to have trip optimization, and they want to be able to maximize the efficiency of their fleet and ultimately provide you with the best customer service. And they think they're going to do all that through data.

What does that mean for an executive without a background in computers, like you?
Based on the simple fact that there's just a huge amount more data than ever before, our greatest challenge is making sense of that data. And we need a new generation of tools to be able to organize and view the data. We need a new generation of executives who understand how to manage and lead through data. And we also need a new generation of employees who are able to help us organize and structure our businesses around that data. When I look at the next set of technologies that we have to build in Salesforce, it's all data-science-based technology. We don't need more cloud. We don't need more mobile. We don't need more social. We need more data science.

How confident are you that non-experts can consume this data?
Very.

Why?
Because the whole concept of data science is that the software becomes the expert, and you as the average user are able to understand what's going on.

Where do your ideas come from?
I like to be around creative people. That's a way that I ideate. I like to be in locations that I kind of feel are very creative, that stimulate me in a creative process. I also get a lot of stimulation being around my customers. The next stage of my creative process is I start to ask myself the right questions. I think the quality of your innovation is directly proportional to the quality of your questions. And I think that I'm constantly asking myself and my team questions to kind of give us clarity on what the future should look like. And I think that helps create a vision. And once you start to create a vision, you start to create a framework of creativity, and ideas come out of that.

History suggests that big companies have a very tough time staying on top. How do you approach that as the CEO of a 16-year-old technology company worth $36 billion?
To quote Andy Grove, "Only the paranoid survive." You have to be ready to have a beginner's mind and constantly be creating the future. Always be ready to start again. And don't be afraid to throw everything away and restart. I think that's what you see in people like Neil Young who are not singing the same songs they were. I mean, he's still singing "Heart of Gold" and "Old Man," but he's also writing new songs.

You're an angel investor in startups like Fitbit, ZocDoc, and Hampton Creek. Why do you spend time on such investments?
I really try to stay in touch with all the new things that are coming, the entrepreneurs, what's happening, and it's been a way for me to stay in touch with the transformations that are happening in the industry.

Are valuations of these companies out of whack?
I think it's really hard to tell right now. I think that for sure the valuations are getting really inflated. I think Warren Buffett said, "When others are greedy, become fearful. And when others are fearful,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become greedy." That's a good phrase to kind of put on some of these right now. That said, some of them are certainly warranted. You see massive acceleration in revenue on some of these companies. Airbnb and Uber are two great examples. Those are companies that have multibillion-dollar revenue streams and that are growing. When the companies with the tens of millions of dollars of revenue start to reach out for those huge valuations, that's when I think we get into trouble. And that's where we're getting to right now. There's a company that I invested in with security technology, maybe only six or nine months ago at some eight-digit valuation, and six months later it has a nine-digit valuation. I don't completely understand that. I worry mostly that it defocuses the entrepreneurs away from creating great businesses.

What's the state of play in cyberterrorism?
Well, if you go to my Wikipedia page, you'll see at the bottom there's a report that I wrote in 2004 called "Cybersecurity and Crisis Prioritization." I wrote that for George W. Bush. And you'll see that we still have a crisis of prioritization regarding cybersecurity because cybersecurity is an oxymoron. And we built an Internet that was inherently insecure and unreliable. That was the nature of the Internet itself when it was built and designed in the '60s. So there is no finish line when it comes to cybersecurity. Everybody should have security as his or her No. 1 priority because we are in a highly dynamic environment. That is not going to change. By the way, I have zero arrogance when it comes to cybersecurity. I am paranoid all the time because I see all the things that are happening, and I am completely worried every single day about security, and everybody should be.

How did Salesforce.com become so chummy with Microsoft, a sworn enemy?
I was at a dinner with Satya Nadella down at the Rosewood hotel in Menlo Park. And Satya was talking about what he is trying to achieve with the company and how he wants to be more collaborative. So I decided to test him. I told him I wanted to hire one of his technologists as head of our infrastructure. What would be in it for Microsoft is the foundation of a partnership that would give us more kinds of ideas of things that we can do together. And he said okay. Now we're learning about things that we could do with Microsoft's file-management technologies and Office that we would never have known on our own.

And you think that couldn't have happened without Nadella?
The other guy [former Microsoft CEO Steve Ballmer] did not care about having a relationship with Salesforce. In fact, he kind of did everything he could to not have a relationship with Salesforce.

Salesforce's revenues are big and growing fast, but the company is not profitable. Do you feel it's important to produce some net income soon?
We have a huge market opportunity in front of us, so growth continues to be a top priority. No other top 10 software company is growing faster than Salesforce. As we take advantage of this growth opportunity, we are also improving profit margins. You can see that in our numbers this year, and we're committed to continuing the trend next year.

Switching to philanthropy, do you feel that the current crop of tech entrepreneurs lacks your sense of civic responsibility?
Well, I think that's the whole history of the tech industry. We have an industry that has a history of stinginess and that does not have a good history of giving back. I've been on my soapbox in trying to get these entrepreneurs to listen to me. And all I want them to know is that it's an option. That's it. It's kind of like when I said to you that the quality of your leadership is the quality of your questions. Just asking them the questions—"Well, what are you doing philanthropically with your company? And what are you doing personally with philanthropy?"—is enough.

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On Salesforce's tech priorities:

When I look at the next set of technologies that we have to build in Salesforce, it's all data-science-based technology. We don't need more cloud. We don't need more mobile. We don't need more social. **We need more data science.**

FEEDBACK *alashinsky@fortunemail.com*

EVERYBODY HATES PEARSON

Okay, not *everybody*. The venerable publishing company is trying to reinvent itself for the Digital Age—in the most fraught, political, emotion-racked field there is: your children's education. That's stirring up a lot of anger.

BY JENNIFER REINGOLD

Pearson CEO
John Fallon

PHOTOGRAPH BY **JASON LARKIN**

John Fallon doesn't look like the devil incarnate. With his ruddy cheeks and cheerful-but-not-too-posh English accent, Fallon, 52, seems more like a buddy from the local pub than the chief executive of a company with $8.2 billion in revenues that is trying to recast global education—and managing to upset a lot of people in the process.

Fallon, who succeeded longtime Pearson CEO Marjorie Scardino in January 2013, is at the helm of an ambitious quest to reinvent the 171-year-old publishing company, best known for its ownership of the *Financial Times* and its international textbook business, as a "global learning services company." The goal is not merely to build a more successful and sustainable business—an imperative as Pearson's traditional print operations shrivel—but also to improve the lives of millions of people throughout the world. "It doesn't matter to us whether our customers are hundreds of thousands of individual students and their parents in China, or thousands

Protesters demonstrate against the Common Core—in which Pearson plays an extensive and vital role—in Mississippi earlier this year.

ROGELIO V. SOLIS—AP PHOTO

of school districts in America," says Fallon. "What we're trying to do is the same thing—to help improve learning outcomes."

The problem is, legions of parents, teachers, and others see the new Pearson in a very different light. Many of them, particularly in North America, where the company does some 60% of its sales, think of it as the Godzilla of education. In their view, Pearson is bent on controlling every element of the process, from teacher qualifications to curriculums to the tests used to evaluate students to the grading of the tests to, increasingly, owning and operating its own learning institutions.

Liberals distrust Pearson's profits: "Always earning," snipes teacher Pamela Casey Nagler in a blog, mocking the company's "always learning" slogan. Conservatives despise the idea of foreigners shaping U.S. education. "We feel like Pearson is an alien enemy and they are propagandizing our children," says Chris Quackenbush of Stop Common Core Florida. Others malign Pearson's competence, its "history of mistakes," according to a recent letter signed by 47 New York City school principals.

Most of all, people fear the company's reach. Alan Singer, a professor of secondary education at Hofstra University in New York who has written extensively about the company, calls Pearson a corporate "octopus." Diane Ravitch, the former Department of Education official and author of the bestselling *Death and Life of the Great American School System: How Testing and Choice Are Undermining Education*, has derided what she calls "the Pearsonizing of the American mind." The company's name has penetrated far enough into popular culture that comedian Louis C.K., whose daughters attend public school, has blasted Pearson in tweets.

Education has always been a fraught field, of course. Few things are more emotional than shaping the minds of children, as Pearson learned during decades in the textbook business. But today standardized testing seems to many to have become the goal of education—as embodied in the No Child Left Behind program and the new Common Core standards—rather than a means of implementing it. Add in the increased use of technology to teach students, government cutbacks, and the private-sector-funded reform movement, and companies have more clout than ever when it comes to what and how kids are taught.

Teachers fear the company's power. Liberals blast its profits. Conservatives can't stand the foreign influence. Even comedian Louis C.K. has blasted Pearson.

In the U.S., testing is the most searingly divisive issue. The business of assessing students through high school has grown 57% in just the past three years, to $2.5 billion, according to the Software & Information Industry Association. Some believe "high-stakes testing" is the best way to create accountability; others think it measures little and incentivizes the wrong things. Either way, it is now the largest segment within educational technology—and in little more than a decade, Pearson has gone from no presence to dominating the realm.

Fallon has gotten used to absorbing jeers aimed at Pearson. He emphasizes that the company's goal is to help students succeed—and that the ultimate decisions remain in the hands of educators and government officials. Moreover, the company says its research indicates that among Americans who've heard of Pearson, 83% have a positive impression of it. "It's inevitable in a field as important as education that feelings are strong," Fallon says. "We are here to serve parents, governments, teachers, and most importantly students. We're trying to take the right actions for the long term, rather than the most popular ones. And if sometimes that means we get both praise and criticism—hopefully that shows we are charting a sensible middle path." He insists, "the more people engage with Pearson, the more they tend to say, 'You're not who we thought you were.'"

Pearson's push into data-driven education has been a smart strategy. It began with Scardino, who expanded Pearson's publishing and education brands far beyond Penguin and the *FT* during her 16-year tenure. And it has accelerated under Fallon, who has expanded further into emerging markets and who has spent the past two years trying to wrestle a hodgepodge of businesses into a more coherent whole.

Fallon has restructured Pearson, cutting $215 million in costs and 4,000 jobs and acquiring digital and other education businesses overseas, most recently Brazil's Grupo Multi chain of English-language school centers for $721 million. Net income has fallen some 18% since 2011, to $854 million in 2013, because of restructuring charges and the fact that the decline in the old businesses is outpacing the growth

STUDENT AND TEACHER: PAT GREENHOUSE—THE BOSTON GLOBE VIA GETTY IMAGES

From top: A middle-school test taker in Massachusetts gets help using an online Common Core exam managed by Pearson; Fallon listens to a student in Shanghai.

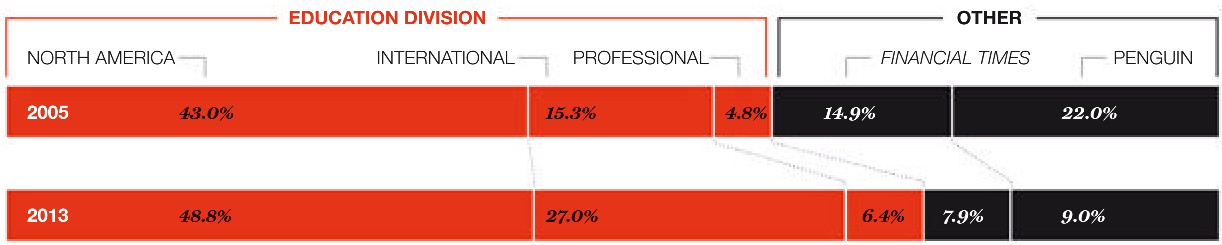
of new ones. But the company's stock has stayed relatively flat, partly because Fallon has adroitly reduced expectations, likening Pearson's reinvention to IBM's move from hardware into services. He now says that the restructuring into what he calls a focused "One Pearson" is largely complete.

It sure hasn't been easy. "John Fallon has had the most enormous baptism of fire," says Tom Singlehurst, head of European media equity research at Citigroup. With the culture of standardized testing—which has been a cash cow for Pearson—under attack, Fallon has to convince the world that the company is truly a force for learning, and not just the executor of an approach that may soon fall out of fashion.

FALLON IMBIBED THE WORLD OF EDUCATION, if only indirectly, growing up in Manchester, England: His father was an elementary school principal. But Fallon didn't initially go into the field. Instead he worked his way up through local government and then into Pearson's

PEARSON LEARNS TO CHANGE

The company has altered its revenue mix, aided by multiple acquisitions in its education unit and divestitures in the publishing group (including nearly half of Penguin).



communications and international divisions. A survivor of throat cancer, he has become the earnest and forthright ambassador-proselytizer for the company and its ambitions.

Pearson's theoretician is Michael Barber, its chief education adviser. Barber, 59, may today be the single most influential educator on the face of the earth. A onetime professor at the University of London, he still has the distant, abstracted air of an academic. Barber was a key architect of England's educational reform under then–Prime Minister Tony Blair, which involved closing underperforming schools and toughening national standards. Blair later asked Barber to apply the same approach to other services. (His work earned him a knighthood.) After leaving government, Barber became the head of McKinsey's education practice, then moved to Pearson in 2011. In 2013 he published a report, "The Good News From Pakistan," examining the positive results of his education philosophy—which has the uneuphonious name "deliverology"—in that country's Punjab region.

The rumpled Barber downplays the company's influence, then describes what to an American's ears sounds like advocating global educational standards. "It's not remotely true to say we are setting the global standards," he says. "What is happening is a global economy and technological change and that affects every walk of life. It's not caused by Pearson. It's caused by globalization. Students are going to be part of a global labor market. Either the work moves or the people move. People who emerge into a labor market will struggle with employment, and we see that now across Europe and America. That's just the way the world is changing. We want to make sure when we say someone is good at math they are good at math anywhere in the world."

For all the breadth of Pearson's education ambitions, it has been in the business for a relatively brief moment in the corporation's long history. The S. Pearson & Son construction company was founded in Yorkshire in 1844. By the end of the century, Pearson had become a giant whose projects included the Sennar Dam in Egypt, railroads in China, and even a tunnel under the Hudson River in New York City.

In the 1920s, Pearson diversified, buying the Lazard investment bank as well as the Château Latour winery and the Madame Tussaud wax museum. It then expanded into newspapers and book publishing in the 1950s and '60s. When conglomerates went out of fashion, Pearson concentrated on media and publishing, focusing on what was then a steady, high-cash-flow business. CEO Scardino doubled down, buying Simon & Schuster's education division for $4.6 billion in 1998 and selling off Tussaud and Lazard. Pearson was now the largest education publisher worldwide.

The real goal was bigger still. Education around the world was moving toward greater testing and use of technology. So in 2000, Pearson spent $2.5 billion to acquire NCS, the largest American testing company, and began developing educational products that went beyond the textbook. "Content has been king," Scardino told *The Wall Street Journal* at the time, "but now we'll have the ability to put content and applications together, and that will really allow us to be king."

The move coincided with the George W. Bush administration's No Child Left Behind initiative, which required districts to measure student and school progress through increased testing. The viewpoint was clear: Schools were failing their students, and the best way to improve was to understand—and measure—what teachers and students were getting wrong.

The assessment push continued under President Obama, who required states to compete against one another for federal education funding—using testing as the metric—in the government's Race to the Top. And then, in 2009, 46 states committed to tougher new standards under the rubric of the Common Core, in hopes of reversing the steep decline in the performance of American students relative to those in other countries. That meant new teaching materials, new technol-

GRAPHIC SOURCE: PEARSON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PEARSON

> “If we say our purpose is to help people make progress in their lives through learning,” says Fallon of Pearson’s self-evaluations, “we’d better be able to demonstrate that.”

TESTING TAKES OFF

The K-12 assessment market has exploded in the U.S. in recent years.

ogy, and, of course, new exams—and Pearson was perfectly positioned, having already bought up many testing businesses.

Today analysts think Pearson controls some 60% of the North American testing market. “From 30,000 feet, the strategy makes sense,” says Claudio Aspesi, senior research analyst at Sanford C. Bernstein. “If you believe in the societal pressure to drive improvement in educational outcomes and there’s not money to put more teachers against students, the next best strategy is to try to use technology.” Pearson was no longer a sleepy textbook publisher; it was now a powerful player in every corner of a burgeoning but more controversial industry, one that spurs deep anxiety in the lives of millions of families.

IT’S ALMOST MIDNIGHT, AND MY DAUGHTER is calling to me. She went to bed hours ago, but she is so stressed—at age 10—that she can’t sleep. She will do this nearly every night for two weeks until she finally takes the long-dreaded New York State English Language Arts exam.

Pearson is a palpable presence in her education at P.S. 41 in Manhattan. The company developed much of the school’s fourth-grade English curriculum as part of the Common Core standards. Pearson also designed the test for it.

All of this in an education world where tests increasingly are the be-all and end-all. “Mom,” she says, tears spilling onto her pillow, “why is one test so important?” She answers her own question with grim, distressing logic: “If I don’t do well on the fourth-grade test, I won’t get into a good middle school. If I don’t get into a good middle school, then I won’t get into a good high school, and if I don’t do that, I won’t get into a good college, and then I won’t get a good job.”

I cringe, feeling that I have failed as a parent if this is what she believes. And yet she has a point. In New York City, that test helps determine which middle school you get into. In her classroom, the pressure was so great that the teacher referred to the tests by aliases: the “waka-waka” and the “whablah.” They were the elementary-school equivalent, it seemed, of Harry Potter’s nemesis Voldemort, more commonly referred to as “he who must not be named.”

In a remarkably short time, the worthy notion of holding students and teachers accountable seems to have morphed into a system centered on “teaching to the test.” Parents who first welcomed higher standards now protest weeks of frantic test preparation; some principals have threatened to opt out of the exams altogether. Says Linda Darling-Hammond, a professor at Stanford’s Graduate School of Education (who worked with Pearson to develop a test, the EdTPA, for evaluating teachers): “Until about 2002, there was always an understanding that tests are prone to error, that they only measure a narrow slice, and that they should only be one piece of information among others. We’ve lost that perspective in policy.”

This is not Pearson’s fault, of course. State and local governments made the policy choices. Yet it is fully in the company’s interest for standardized testing to increase (a December 2014 company report trumpets the coming “renaissance in assessment”). Fallon is quick to defend the principle, saying that the rise of big data allows for the opportunity to improve learning by measuring exactly what is and isn’t working. “This idea of the shift from sort of inputs to outcomes, I think, is one that is now becoming all-pervasive in pretty much every area of public policy,” he says. “So why should education be any different?”

To be successful in measuring outcomes requires not only good intentions, but also competence. And here, Pearson has some explaining to do. Robert Schaeffer, public education director of FairTest, an advocacy organization that says it “works to end the misuses and flaws of standardized testing,” has kept a log of the company’s quality-control problems. The low lights include everything from printing errors to frozen screens at test time in 26 Florida counties.

FairTest says Pearson has made 13 significant errors from

GRAPHIC SOURCE: SIIA


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Michael Barber, Pearson's chief education adviser, may be the most influential educator on earth.

2013 to today, including scoring mistakes that prevented 5,300 students from qualifying for gifted and talented programs in New York City. The company mis-scored questions on Virginia's Alternative Assessment Program for students with learning disabilities—leading to 4,000 students being told they had passed the test when they had actually failed it. (In each instance Pearson rectified the problem once it came to light.) Argues Schaeffer: "There's been a higher percentage of reported foul-ups by Pearson than by other companies."

The company questions the findings. "We've never seen any methodology to suggest Pearson is less accurate than any other assessment company," a spokesperson says. "In fact, we believe we are one of the most accurate." He adds, "Any time mistakes occur, however rare, that's unacceptable to us."

Pearson's behavior in winning lucrative contracts has also sometimes been troubling. The company used its nonprofit foundation—led primarily by Pearson executives—to pay for education leaders to take expensive trips to such places as Rio de Janeiro, Singapore, and Helsinki as they were contemplating hiring Pearson to develop the materials for their states' version of the Common Core. In 2011, New York State attorney general Eric Schneiderman launched an investigation into such behavior. Pearson settled the case in 2013 without admitting wrongdoing, paying a $7.7 million fine and agreeing to separate its foundation's efforts from those of the company. Said Pearson at the time: "We recognize there were times when the governance of the foundation and its relationship with Pearson could have been clearer and more transparent." In November 2014, Pearson announced it was closing the foundation altogether. It appeared to have little further utility.

Another mess involves a partnership between Pearson, Apple, and the Los Angeles Unified School District, which in 2013 announced a $1.3 billion project to provide an iPad, loaded with Pearson educational material, to each of the 650,000 students in the district. The plan immediately bogged down in bureaucracy, technological problems (kids disabled controls and used the tablet to surf inappropriate sites), and accusations of influence buying by the winning bidders. Public radio station KPCC reported that the company's foundation subsidized attendance by educators, including some members of the bid committee, at a Pearson conference. (The company denies providing subsidies.) At the conference, Pearson distributed iPads to the attendees. (The company says recipients agreed to use them only for district business.) All this took place before the bidding process had even begun. The FBI is investigating—it seized boxes of documents from the LAUSD offices in December—and the new schools supervisor terminated the contract last fall, announcing he would put it out to bid once more. Pearson says it has not been asked to provide information to investigators.

In other places, complaints about the state's contract and oversight process could hurt the company. In Texas, for example, where Pearson has a $468 million contract to provide tests and educational materials, an audit found poor monitoring of the billing process at the Texas Education Agency. The same audit found that Pearson hired 11 staffers from the agency, two of them involved with the contract, shortly after it awarded the contract to the company (the agency waived rules delaying some of the employees from being hired by state vendors). As a result of that association—and complaints from school activists about how parts of U.S. history have been treated in its texts—some observers believe Pearson's contract may not be renewed.

Fallon was not the CEO when those incidents occurred, but the task of improving the company's reputation is falling to him. Adding to the pressure is the growing backlash against Common Core—which has been so beneficial to Pearson's fortunes in recent years. Already three states have dropped out, and antipathy is mounting from both the left and the right. Schaeffer of FairTest thinks the movement may be rolled back now that Republicans are in charge of Congress. Even Fallon acknowledges that something has gone awry. "I do think as a wider community we have to put assessment and testing into context," he says. "And I do think we have to be wary of layering

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too many different things onto one moment in time."

That said, even if the standards are changed, they are likely to be replaced by new standards—and Pearson remains one of the only players with the size and scope to handle large testing or curriculum contracts. Pearson doesn't enjoy the withering criticism from countless directions, but the truth is, it may not matter that much: Even if the curriculum changes drastically, the company may well still provide the means by which it is disseminated.

TESTING HAS HELPED PEARSON REDUCE ITS dependence on old-fashioned publishing. Since 2008 its U.S. textbook revenues have fallen an estimated 17%; sales at the FT Group, despite recent improvements, have dropped 29% since 2005, in part because of divestitures. Meanwhile some 60% of Pearson's revenues now come from what it calls "digital and services"—which basically includes every revenue source other than those from printed materials—compared with 37% in 2006.

Online education is clearly a huge opportunity for Pearson. It's cheap and accessible anywhere that has an Internet connection. E-learning was a $91 billion market in 2012, according to an estimate by IBIS Capital, and it's growing fast.

So Fallon is now pushing Pearson toward direct-to-consumer education, primarily overseas. There are millions of potential customers, mostly adults, who often don't have access to top universities or vocational schools. It would allow the company to diversify out of North America, and needless to say, selling directly to adults is less emotionally charged than the K-12 market. It's also a way for Pearson to put its outcome-based strategy in place with less interference, and—the company hopes—show that it works. Says Tamara Minick-Scokalo, head of international for Pearson: "Where we can really play a role is in doing more of the total education value chain." Translated from management jargon into plain English, her statement seems to confirm every critic's worst fears: Pearson wants to be involved at every stage of education.

Since 2010, Pearson has spent more than $2 billion on international adult education: The purchases include a 75% stake in CTI, a chain of computer-training schools in South Africa; Wall Street English, an English-language school business in China; and, as noted earlier, the Multi chain of English-language schools in Brazil, for $721 million. Pearson is also helping run and promote the online degree programs at schools such as Rutgers, the University of Florida, and Arizona State—which is likely to receive a windfall with Starbucks' 2014 announcement that it will pay for full-time employees' college studies, as long as they enroll at ASU Online. More than 1,000 students are already enrolled.

All of this change, including Fallon's strong shift to centralization, has shaken Pearson itself, which was long a diffused, friendly, and somewhat sleepy organization. Morale has tumbled; reviews on the career site Glassdoor.com describe a scene of constant reorganizations and confusion, with only half saying they support the CEO. One typical comment, from a self-described VP: "'One Pearson' is a nice motto theoretically, but may not work operationally because aircraft carriers are hard to turn. John Fallon, your good intentions are getting lost in the botched handling of the most recent reorganizations. Get real and listen to the folks in the trenches."

To his credit, Fallon is trying. He is making town halls and interactions with employees as central to his job as time with investors and clients. At a meeting with the Boston community college sales team—as well as at a later sit-down with students and faculty at Bunker Hill Community College—he responded to tough questions honestly and came across as authentic. "What are we not doing well?" he asked more than once and then listened intently. Employees weren't shy, volunteering struggles with faulty technology and lamenting the large amount of turnover in the Boston offices.

Fallon is also trying to make Pearson more accountable—only logical for a company that is helping to set the world's educational standards. In late 2013 he announced that Pearson would, in effect, eat its own cooking. Much as it assesses others, it would assess its own performance, reporting the results in each business publicly by 2018 in what it calls "efficacy." Pearson has developed specific criteria for the success of each business or initiative with more than $1 million in sales, says Barber, and promises that it will publish the results and hold itself to those standards.

The level of disclosure goes far beyond what most public companies are required to report. Fallon says that if Pearson's programs are not having the desired outcome—if, say, English-language improvements in its Chinese schools do not meet the criteria—the company will abandon them. "If we say our purpose is to help people make progress in their lives through learning," he says, "we'd better be able to demonstrate that." The move requires guts—after all, few companies willingly put themselves under a microscope—but it's worth noting that the company has given itself five years to get ready. That's far more than many of its own customers receive.

Can Pearson make the grade? Fallon has the vision—and for a little while longer, at least, the apparent support of investors. Yet the internal challenges, not to mention the external opprobrium, mean the strategy's success is not at all assured. "I think [Pearson] would be delighted to have as much clout as [the critics believe]," says Bernstein's Aspesi. Fallon has set the timer; now he needs to pass the test. F

FEEDBACK *jreingold@fortune.com*


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THE NEW WORL

A monorail approaches in Kuala Lumpur, the frenetic, fast-growing capital city of Malaysia.

D OF BUSINESS

China's slowing. Russia's flailing. Is any emerging market worth putting your money in? We've found seven of them.

By IAN BREMMER

Additional reporting by Erika Fry and Deena Shanker

THERE WAS A TIME, not so long ago, when it seemed the rugged promise of the globe's economic frontier could be summed up with a simple acronym: BRIC. To investors and corporate prospectors alike, Brazil, Russia, India, and China were like Gold Rush towns high in the hills—deep, rich veins of commerce that could be tapped by anybody quick enough, industrious enough, and brave enough to stake a claim.

Though separated by the imposing bulwarks of geography, language, culture, politics, and history, the four BRICs were kindred spirits—all were populous, underdeveloped lands with

COUNTRY	FOREIGN DIRECT INVESTMENT (NET INFLOWS, 2013)	TIME TO START A BUSINESS
COLOMBIA	$16.2 billion	11 days
INDIA	28.2	30 (Delhi)
INDONESIA	23.3	53
KENYA	0.5	30
MALAYSIA	11.6	6
MEXICO	39.2	6
POLAND	–4.6	30
U.S.	295.0	4 (New York City)

81% OF ROADS IN MALAYSIA ARE PAVED. IN COLOMBIA,

governments eager to welcome investment from Western corporations. Or so it appeared to Jim O'Neill, the son of a postman from Manchester, England, who had risen to head global economic research at Goldman Sachs—and who had ingeniously lumped these four behemoths together in a November 2001 analyst report, titled "Global Economics Paper No. 66: Building Better Global Economic BRICs." That modest 16-page client briefing would inevitably launch untold numbers of BRIC mutual funds and ETFs, indexes, investment conferences, and Wall Street research teams. It would force major companies to rethink their own marketing and manufacturing strategies, reroute supply lines, and send billions of corporate investment dollars into a constellation of once-little-known cities from Bangalore to Shenzhen.

O'Neill's BRIC conceit, it's fair to say, redrew the map of global business. Consider that when the Goldman analyst coined the term, Brazil, Russia, India, and China accounted for $2.7 trillion in GDP, or 8% of the world economy. They account for roughly 19% today. (In 2010 the four BRICs invited South Africa to join the group, making them BRICS with a capital "S.")

Back in 2001, China was just revving its engine, a $1.3 trillion economy that was the world's sixth largest, trailing the U.S., Japan, Germany, the U.K., and France. As for Brazil, Russia, and India, none was in the global economy's top 10. Brazil, with a population then of 177 million and a land mass nearly the size of Europe's, had an economy smaller than Spain's.

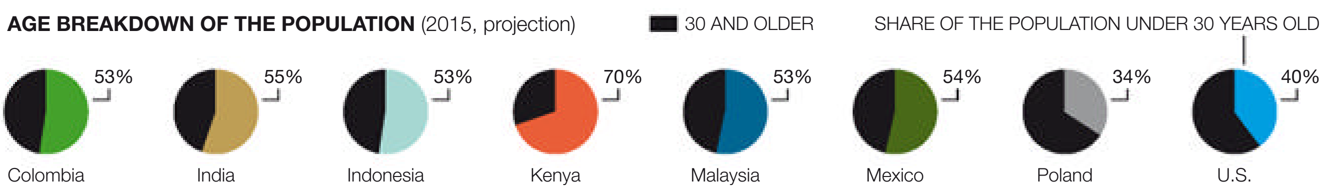
All are giants now. India's GDP exceeded $2 trillion last year. China's output is five times that, its economy second in power only to the U.S.'s. Brazil's growth rate rose, albeit in fits and starts, from 4.3% in 2000 to 7.5% in 2010. Over the same decade, Russia's middle class doubled in size.

Yet as much as we might celebrate the concept of BRIConomics for its insight and uncanny timeliness, it is time now to put the thing to pasture. As quickly as the world transformed at the start of the millennium, it is changing again. China's economy is grinding into a lower gear, growing in 2014 at the slowest pace (7.4%) in nearly a quarter-century. Scandal-plagued Brazil stands on the edge of recession. A cliff dive for oil prices, sanctions, and the poor political choices of its leaders have Russia reeling, its economy on track to contract 3.5% this year.

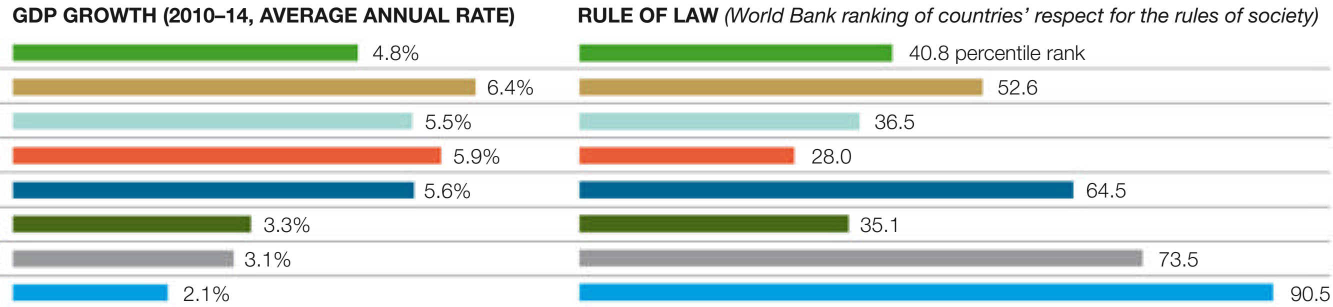
To be sure, O'Neill and his Goldman team were quick to see that these economies would hit their estimated long-term growth targets only if political leaders were willing and able to "maintain policies and develop institutions that are supportive of growth." In other words, these emerging stars would emerge only if they were well governed.

For many developing countries—BRICs and beyond—that's been the key missing ingredient. A decade ago it seemed that almost every emerging market would fully emerge. Money flowed into dozens of countries, and their governments were content to let the good times roll. No need for painful reforms when all the lights are green. Middle classes expanded, and public expectations soared for ever-rising standards of living.

AGE BREAKDOWN OF THE POPULATION (2015, projection)



PREVIOUS PAGE: PHOTO BY SANIT DAS—PANOS PICTURES, SONY'S GLOBAL IMAGING AMBASSADORS; SOURCES: WORLD BANK; UNITED NATIONS



52% OF THE POPULATION ARE INTERNET USERS.

Then the financial crisis struck, triggering a global economic slowdown. It suddenly began to matter which of the developing states was well governed and which was not. Political leaders in emerging-market nations found themselves exposed when growth slowed and public anger surged over bad governance, corruption, and lousy public services. The eruption of protests in Turkey and Brazil in 2013 hinted at similar sentiment in other states, and those pressures are still building.

China remains a potent lure for foreign investment, and there will be plenty of opportunities for profit, even as President Xi Jinping's reform process trims the sails on growth. Yet given the stakes involved in China's reforms and the pushback Xi will probably receive as he cuts more deeply into the profits and privileges of some of China's most powerful people, the risk of economic—and political—turmoil is likely to spike.

So where, now, should companies turn for their strategic investments? Well, that has everything to do with what they should look for: stability and resilience. And for that we found seven smart bets. In short, these are markets where it would seem good governance and sustainable growth are likely to go hand in hand.

Voters tossed aside underperforming governments in India and Indonesia last year to elect talented politicians promising positive change. Real reform is now on the agenda in both countries. Meanwhile, in Malaysia, an incumbent government is offering credible pledges for smarter economic management. All three will benefit in coming months from less conflict in the region. With domestic economic reform also on the agenda in China and Japan, leaders of all of Asia's most powerful states have good reason to avoid the kind of conflict that can destabilize economies. Worth noting is that India, Indonesia, and Malaysia also benefit from political and commercial competition for regional influence among the U.S., China, and Japan.

Another region showing great promise is sub-Saharan Africa, now home to the world's fastest-growing middle class. Investors continue to think of Africa almost entirely as an exporter of oil, gas, metals, and minerals, but services are playing an ever larger role across the continent. And governance in many countries has improved sharply. The World Bank's 2013–14 "Doing Business" report asserted that sub-Saharan Africa has benefited more than other regions from regulatory improvement. Few countries offer greater promise than Kenya.

Finally, even in regions where growth is uneven, there are emerging markets where improved governance provides value. Latin America, Mexico, and Colombia offer opportunities that Brazil and Chile, let alone Argentina and Venezuela, cannot. Europe is in for a rough ride this year as political consensus on further reform of the eurozone erodes and external threats from various jihadi groups and Vladimir Putin's Russia add pressure on beleaguered political leaders. Poland offers a rare bright spot.

While we couldn't come up with a clever acronym for the lot—and we won't make a prediction beyond the next five years—here are our lucky seven.

INDIA

Change has come to India, the lone BRIC country that's worth holding on to. An obstructionist opposition is slowing the pace of reform, but Prime Minister Narendra Modi's consolidation of power and his Bharatiya Janata Party's state election victories should ultimately bring deep structural changes that ought to boost growth. The central and state governments' liberalization of labor and environmental regulations, coupled with generous new financial incentives for investment, is improving the outlook for the manufacturing sector too. Authorities are

A worker navigates the construction site of a new pier at New Priok container terminal in North Jakarta in November. Indonesian President Joko Widodo said his government plans to build 24 seaports over the next five years.

94% OF INDONESIANS HAVE ACCESS TO ELECTRICITY; 69 MI

redesigning policies to attract additional foreign investment into the manufacturing, hydrocarbons, insurance, defense, and railways sectors. With all of the above, the rate of economic growth, frustratingly slow in recent years, is likely to gather steam.

INDONESIA

There's also a fresh new face in Indonesia. President Joko Widodo, whom *Fortune* named to its inaugural list of "The World's 50 Greatest Leaders" last year, has already cut costly fuel subsidies, and his administration is likely to enact business-friendly changes for the oil and gas sector. Savings from subsidy reduction will help fund ambitious infrastructure development plans, higher spending on education should gradually improve worker productivity, and a rapidly expanding middle class will create new commercial opportunities. Though he faces some resistance to more sweeping reforms, like the lifting of a ban on raw-ore exports, voters have made clear they expect better governance, and their new President appears committed to risking his political capital to deliver on his promises.

MALAYSIA

In Malaysia, the incumbent government is trying to stay ahead of increased demand for change. Prime Minister Najib Razak scrapped fuel subsidies and will enact a 6% goods and services tax in April to improve his government's fiscal position. Najib will likely accelerate his Economic Transformation Program by introducing further tax incentives for foreign investors. Further liberalization of the manufacturing and financial services sectors is likely as well. It's a fair bet that as growth tapers in China (and the impact of that slowdown is felt in Malaysia), Najib's government will feel pressure to boost public spending on infrastructure, education, and health care. That's a good thing—particularly if authorities, as expected, continue to advance a broad fiscal reform

BEAWIHARTA—REUTERS

LLION USE FACEBOOK.

agenda, with support from the middle class, to balance the nation's budget by 2020.

MEXICO

Since President Enrique Peña Nieto took office in December 2012, Mexico has undergone a deep reform process, enacting changes to the energy industry, labor market, telecom sector, educational system, and the government's fiscal framework. And in the run-up to the 2015 and 2018 federal elections, the government seems all the more eager to attract foreign investment, particularly in its energy sector. Given the need to develop and renovate infrastructure in the industry, near-term opportunities will continue to arise in the construction and operation of pipelines, highways, ports, and other areas. Mexico's economy should

The **Best Bets** for Individual Investors

BY JEN WIECZNER

"It's a world of diverging markets," says Rashique Rahman, head of emerging-market debt at fund giant Invesco. "And we can't paint 'em with a big broad brush." While former powerhouse markets like Russia and Brazil are straining under falling commodity prices and a stronger U.S. dollar, some of their smaller neighbors are stealing the spotlight (and, yes, even benefiting from cheap oil). Below, three of the best emerging markets to invest in now.

INDONESIA

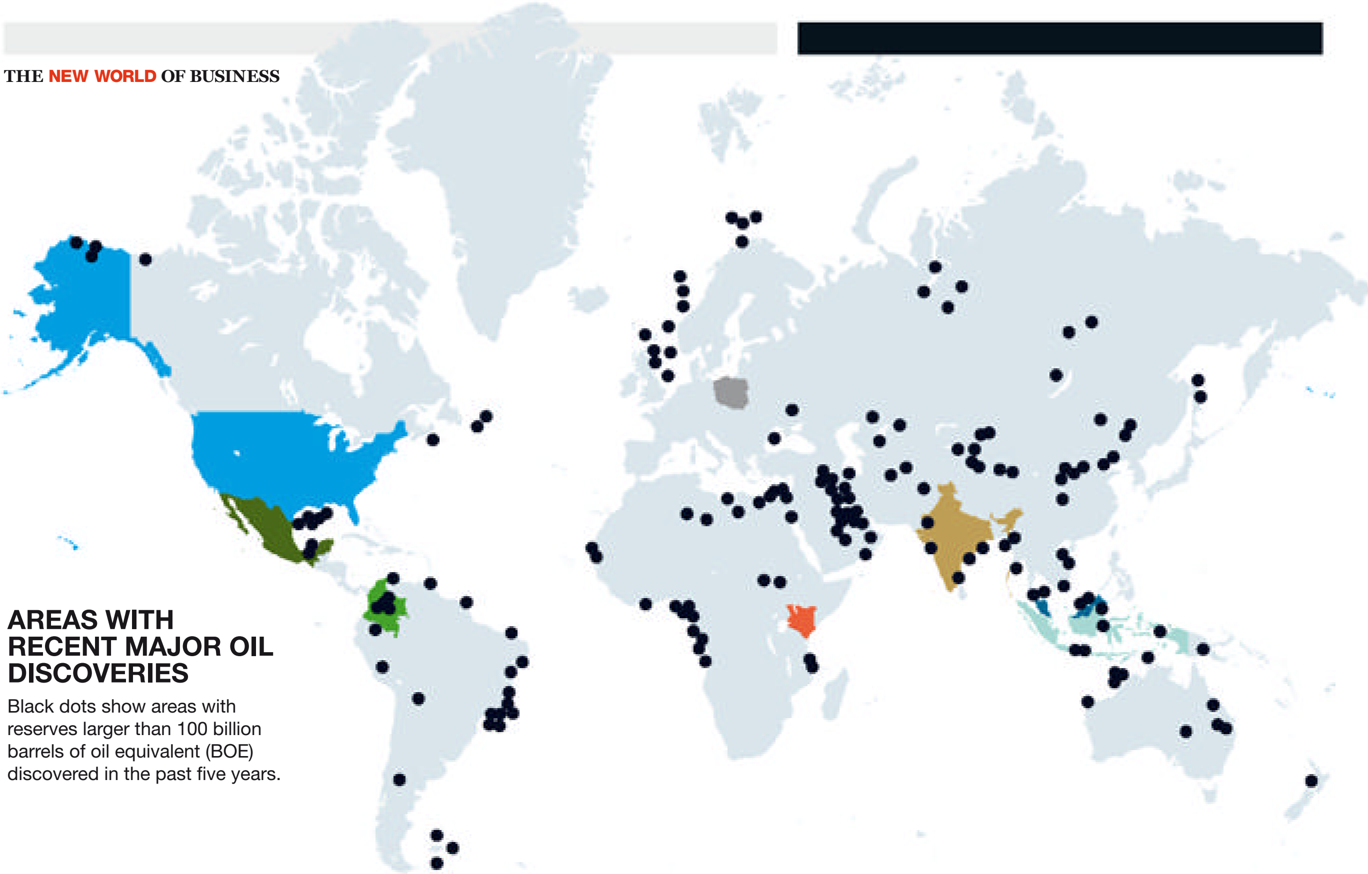
With nearly 253 million people, Indonesia is the most populous country after China, India, and the U.S. Its massive and ascending middle class is consuming so much energy that the Southeast Asian nation now imports more than it exports—making low oil prices a boon. And with the new reform-minded President, Joko Widodo, overhauling the country's budget and cutting corruption, investors see plenty of upside. Jay Nogueira, associate portfolio manager of T. Rowe Price's $3.9 billion Global Growth Equity strategy, is bullish on Bank Central Asia, "the J.P. Morgan of Indonesia," as well as Dutch consumer conglomerate Unilever, which has a large Indonesian business.

MEXICO

On the U.S.'s southern flank is another country on the reform track—opening up its state-run energy industry to foreign players and ending its notorious telecom monopolies. Lately Mexico has even challenged China's status as a global manufacturer. Such positive signs were driving up local equity valuations until late 2014, when a broad selloff in emerging markets brought the MSCI Mexico index back to earth. Rick Schmidt, who oversees $8.9 billion in emerging-markets portfolios for Harding Loevner, likes Mexican Coke bottler Femsa, which also owns 20% of Heineken, as well as Grupo Aeroportuario del Sureste, which operates the Cancún airport.

POLAND

Though Poland has one of the highest GDP growth forecasts in the European Union—3.3% in 2015, according to the IMF—its markets have recently been hurt by economic troubles all around its borders, from the malaise in Western Europe to warmongering in Russia. That has created buying opportunities for investors who see value in a country undergoing rapid modernization—and that, as a net energy importer, is getting a boost from cheap oil. "Poland is just your classic emerging market. It still has a large rural base, but urbanization continues and people are moving into the middle class," says Schmidt, who owns Bank Pekao there.



WOMEN HOLD 24% OF POLAND'S PARLIAMENTARY SEATS.

also benefit from an expanding U.S. economy, as better times north of the border bring more tourists and Mexican citizens working in the States increase the remittances they send back home.

COLOMBIA

Our bet is that President Juan Manuel Santos will reach a peace deal with left-wing rebels of the Revolutionary Armed Forces of Colombia (FARC) by the end of this year. That would enable the government to expand the rule of law, deepen rural development, and attract investors worried primarily about security. The Santos administration and opposition leaders broadly agree on economic policy, meaning political battles are unlikely to undermine the business environment.

POLAND

No country has gained more influence in Europe in recent years than Poland, where good government is helping to grow a promising emerging-market economy. The ruling Civic Platform Party will in all likelihood return to power (as the leading party in the country's governing coalition) following elections in 2015, enabling the government to continue its bid to liberalize the economy, encourage foreign investment, and develop national infrastructure. With that, structural reforms and government investment should accelerate, especially in the defense and energy sectors, though perhaps not until next year.

KENYA

Africa's other large economies, Nigeria and South Africa, face more than their share of political and economic turmoil these days, but Kenya appears headed in the other direction. Backed by a majority in both legislative chambers, President Uhuru Kenyatta appears poised to advance long-delayed plans to develop the country's power sector and national infrastructure. His government has strengthened the state's security bureaucracy in the wake of recent terrorist attacks—and the decision by the International Criminal Court to withdraw charges against Kenyatta brings a new measure of stability. The implementation of IMF-supported fixes to central bank and treasury management ought to keep inflation in check and the currency stable as well.

GRAPHIC SOURCE: IHS ENERGY

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WHY YOU SHOULDN'T INVEST IN THE RUSSIAN KLEPTOCRACY

by Bill Browder

Browder in Moscow's Red Square in 2004

THREE YEARS AGO AT THE WORLD Economic Forum in Davos, Switzerland, I found myself at dinner with the CEO of a Belgian industrial conglomerate and the head of a major Swiss commodity-trading firm. As I was putting my napkin in my lap, the Belgian grabbed my name tag and exclaimed, "You're Bill Browder? You're the reason we don't invest in Russia!" The commodity trader looked over and said, "Same for us!"

You may wonder why two strangers had sworn off Russia because of me, but when you hear my story, you'll understand.

I moved to Moscow in 1996 to set up an investment fund called the Hermitage Fund, which eventually became the largest investment fund in the country, with $4.5 billion in assets.

When I started, the Russian stock market traded at a 99% discount to its Western comparables. The reason it was so cheap was that the oligarchs, who owned most Russian companies, had embarked on an orgy of stealing unprecedented in history. They elevated the acts of asset stripping, transfer pricing, dilutions, and embezzlement to a fine art.

I had an enormous financial interest in stopping the stealing, so I took it upon myself to research the theft and then share my findings with the Western press. Until about 2004, this strategy worked well. The oligarchs were stealing power from Putin at the same time that they were stealing money from me, so I had a very powerful, if accidental, ally. As I confronted companies like Sberbank and Gazprom, Putin would often weigh in on my behalf and slap them down.

Unfortunately this alignment didn't last. In the summer of 2004, Putin publicly crushed Russia's biggest oligarch, Mikhail Khodorkovsky, who was put on trial and sentenced to nine years in prison. The other oligarchs quickly fell into line. From that moment forward, Putin's interests diverged from mine. Shortly thereafter he expelled me from Russia and declared me a threat to national security.

After I was deported, 25 police officers raided our offices in Moscow and seized our corporate documents. These were used to steal our investment companies and ultimately to commit a $230 million tax-rebate fraud, the largest in Russian history.

Our lawyers started to investigate, but the police opened criminal cases against each of them, forcing them and their families to flee the country. Only one—Sergei Magnitsky—stayed and bravely testified against the officials involved. Shortly afterward he was arrested, thrown into jail, and tortured. After 358 days, he was beaten to death by eight riot guards with rubber batons.

The Russian government then began an extensive coverup. It refused his family an autopsy, exonerated every official involved, and accused Magnitsky of committing the crime that he had uncovered.

Clearly this story should be enough to dissuade any reasonable

BROWDER: JAMES HILL


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person from investing in Russia. But amazingly, my phone has recently started to ring with people asking, “Hey, Bill, the Russian market is down 63% from its high four years ago. Do you think we should get in?”

I tell them all, “No.”

Putting aside any moral arguments, $1,000 invested in Russia today will be worth a lot less in five years.

When Putin invaded Ukraine, he had no idea how fragile the Russian economy was. The combined effect of Western sanctions and crashing oil prices—along with what has been estimated to be at least a $1 trillion theft from the state by Putin’s cronies—has resulted in an economic crisis that’s worse than 1998’s.

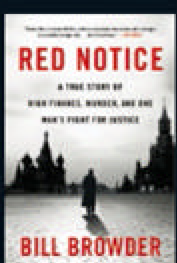
In the past year the ruble has devalued by almost 50%. This is particularly pernicious in a country that imports more than half its consumer goods. Imagine that half the things you buy have just doubled in price. What would you do? Get mad at your leader, that’s what.

Putin is not a man who deals well with other people’s negative emotions toward him. His only reflex in these situations is to crack down. That, in turn, only incentivizes people to take more money out of the country, which further devalues the ruble. This appears to be an unstoppable doom loop. Putin’s KGB playbook of oppression works on individuals, not on markets. He will never be able to bend the markets to his will.

This won’t end well for anyone involved. There will be full-scale currency and capital controls in the future. When there’s still not enough money, Putin will start expropriating and nationalizing companies just as Hugo Chávez did in Venezuela.

And when that doesn’t work, he will start printing money, creating hyperinflation. The only thing that can save him is $100-a-barrel oil.

Ultimately, Putin’s days are numbered. It may be a year, two years, or more, but his brand of dictatorship is incapable of dealing with such a grave economic crisis in such a big and unmanageable country. In the meantime, don’t be fooled by the likely dead cat bounces. Russia is a sucker’s market, and one that you shouldn’t touch with a barge pole.



Browder, founder of Hermitage Capital Management, was Russia’s largest foreign investor until 2005. His book Red Notice: A True Story of High Finance, Murder, and One Man’s Fight for Justice *is being published by Simon & Schuster on Feb. 3.*

RUSSIAN UNDRESSING

INVESTOR BILL BROWDER PULLS BACK THE CURTAIN ON PUTIN’S CULTURE OF CORRUPTION.

BY NORMAN PEARLSTINE

THE JACKET NOTE FOR BILL BROWDER’S *Red Notice* calls it “a real-life thriller about an American-born financier in the Wild East of Russia, the murder of his principled young attorney, and his dangerous mission to expose the people responsible in the Kremlin.”

The description is accurate as far as it goes. Browder’s lawyer, Sergei Magnitsky, uncovered a $230 million fraud perpetrated by Russian government officials against one of Browder’s companies in 2008. He was jailed after disclosing the fraud and subsequently killed while in prison. Browder, who as founder and CEO of Hermitage Capital Management had made and lost billions of dollars in Russia, has devoted himself since Magnitsky’s death to exposing corruption and human rights abuses in Russia. For his efforts, Browder now finds himself subject to extradition to Russia, where the government has convicted him in absentia of tax evasion and sentenced him to nine years in prison.

But that’s only part of the story. The first half of *Red Notice* traces Browder’s improbable journey from prep-school washout through college, business school, and a series of consulting and Wall Street jobs before becoming Russia’s largest foreign investor.

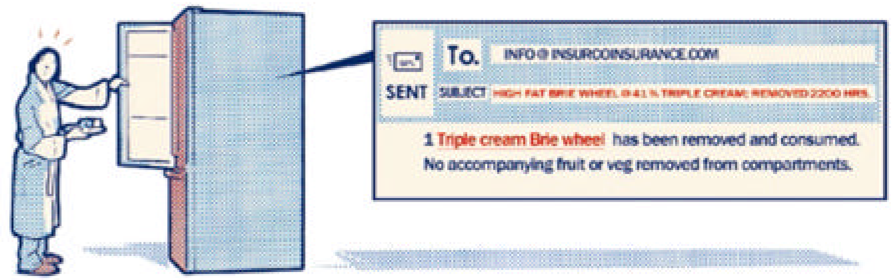
The son of left-leaning academics and grandson of Earl Browder—the labor organizer and head of the American Communist Party—Bill Browder rebelled by becoming a capitalist. He recounts his early training through a series of pitch-perfect descriptions of J.P. Morgan recruiters, Boston Consulting Group managers, Salomon traders, and dealmakers such as Robert Maxwell, Ron Burkle, and Edmond Safra.

Whether consulting for a Polish bus company, advising a Murmansk fishing fleet, or finding undervalued, newly privatized companies in Russia, Browder encounters real-life opportunities and absurdities that read better than fiction.

This book-within-a-book does for investing in Russia and the former Soviet Union what *Liar’s Poker* did for our understanding of Salomon Brothers, Wall Street, and the mortgage-backed securities business in the 1980s.

Browder’s business saga meshes well with the story of corruption and murder in Vladimir Putin’s Russia, making *Red Notice* an early candidate for any list of the year’s best books.

WHILE YOU WERE OUT
BY STANLEY BING



MAKE ME ONE WITH EVERYTHING

Living with all our appliances and gizmos connected is going to require some... adjustments.

I WENT TO THE CONSUMER ELECTRONICS SHOW IN Las Vegas, and all anybody talked about was the Internet of Things. Yes, it looks like the day is finally here when every Thing we own has a tiny silicon brain that can think and talk to you and, more important, to all the other Things, and all is connected with the great web that unites us. Reminds me of the old joke: What did the Buddhist say to the hot dog vendor? "Make me One with Everything."

Except now it's not a joke. It's your future, and it's here. Well, my mother didn't raise any Luddite children, so I immediately swung into action, implementing all the gizmos, upgrades, and super-connective wingdings I saw in Vegas. I have to tell you, I'm excited about my brave new world, although it's possible a little fine-tuning might be in order.

Take my car, which is now fully in touch with the Internet and anticipates my listening needs, regulates its fueling and fluid levels, knows my contact numbers, and has a firm grasp of my favorite destinations. It also appears to have been programmed to select a route far from that Jack in the Box on Wilshire that used to be one of my favorite stops on the way home. Oh, and it parks itself, which is convenient. I confess it's a bit annoying to be corrected when I choose to do it myself. "You're at the wrong angle, Stan," it will say when it's clear I'm doing a very good job without its help.

When I get home, it's like magic. My entire house knows I'm back! Lights automatically spring to life just the way I think somebody said I like them, speaking to the computers in charge of regulating my environment and informing my 72-inch 8K OLED video wall that it's time to show me that incredibly vivid display of paints and crayon colors, which is the only programming now available for it. The good news is that I hear there's a fabulous video of a salad being tossed in slow motion that's scheduled for release in the third quarter.

Which brings us to my refrigerator, which knows my needs better than I do myself. "Get your hands off that cheese," it will say, adding, "The kale is in the veggie bin." It means business, by the way, since it's empowered to communicate with the computer of my health insurance provider, which will ping me if it's informed I'm not adhering to the standards that determine the size of my premium. The fridge is also in close communication with my watch, which monitors my blood pressure, heart rate, cholesterol, and viewing plans for the evening, and is capable of simultaneously communicating with my doctor, lawyer, and Amazon Prime.

I won't get too detailed about my new bathroom, which has the capacity to analyze whatever is, you know, put into it. I'm thinking of having it downgraded back to stupid. Last night at midnight while I was stopping by for a visit, its voice said, "Your blood alcohol content is way over acceptable limits, Stanley. This finding will be admissible as evidence should you be apprehended while behind the wheel." On my way out the door, I could swear I heard my digital scale say, "You're fat." Which I thought was unkind, particularly at that hour. One weighs the most at the end of the day, after all.

Naturally, home security is at the heart of this new world of Things. I was most impressed in Vegas with the swarm of robot spiders on display. If one senses something, the rest go skittering after, falling over one another, scrabbling forward with their cute little pincers. Together they possess one giant digital arachnid brain linked to the central command in my refrigerator. Sadly, a number of household pets in the neighborhood seem to have disappeared. I'm sure it's unrelated.

Oh, yes! Did I mention the drones? People love 'em! They're so much fun, from the tiny little guys that can spy on your neighbors to the big mothers that go for $100,000 and are sold to the military. Or you and me, maybe, huh? What couldn't we do with one of those suckers!

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Sunburst Jr. High School students in Sunburst, Montana, won $140,000 in technology for their school as a 2014 National Grand Prize Winner in the Solve for Tomorrow Contest. Their project focused on finding a STEM-based solution to the dust blowing in from nearby alkali salt flats that cause fatal traffic accidents, one of which took the life of a teacher.

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